DEFINING A COMPETENCY FRAMEWORK TO SHAPE THE PROFESSIONAL EDUCATION OF NATIONAL SECURITY MASTER STRATEGISTS: A WEB-BASED DELPHI STUDY

A Dissertation

by

THOMAS GEORGE CLARK

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2005

Major Subject: Educational Human Resource Development

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Approved by:

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ABSTRACT

Defining a Competency Framework to Shape the Professional

Education of National Security Master Strategists:

A Web-Based Delphi Study. (December 2005)

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The purpose of this study was to develop a competency framework to shape development of a professional education program for master strategists in national security. The research problem focused on the absence of a competency framework to guide professional education of strategists who must be capable of conceptualization and innovation—master strategists. The outcome of this study was a set of the most important components that constitute a professional education framework for master strategists.

This Web-based study followed a RAND Delphi heuristic model that is qualitative in nature. Instrumentation for the first round consisted of a short vignette that placed panelists in a unique situation of being able to engage a "time traveler" from 20 years in the future. The time traveler represented a source of perfect knowledge, but could provide only a "yes" or "no" response to panel member questions concerning master strategist professional education needs in the year 2022. In the

subsequent two Delphi rounds, the instruments consisted of panel member questions from the previous round. The panel of experts consisted of 12 professional strategists in the field of national security strategy.

The results of the study provided support to the description of master strategists as strategic leaders, strategic theoreticians, and strategic practitioners. Panelists highlighted four content domains of personal attributes, security framework, theory-based knowledge, and culture and values that encompass the range of competencies for a master strategist professional education framework. Panel members detailed a need for master strategists to have a higher order temporal perspective to conceive time as epochs and ages, defined as shifts in development punctuated by events and prominent periods in progress, respectively. Panelists described a master strategist professional education framework that mirrored the theory of profound knowledge with meta-competencies as the basic building blocks.

DEDICATION

This work is dedicated to my wife Miyong,

my late father T. C. Clark and mom, Vynomma Clark.

You provided unwavering support, unconditional love, and a source of renewable energy during a difficult, long journey—thank you, we made it!

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In looking back to the beginning, the journey called a doctoral program has been at once strange and wonderful! The most important lesson to be learned dealt with the academic inaccuracy of conferring degrees to individuals without acknowledging the contributions of the many individuals who make the journey successful. If consistency of purpose and sacrifice were the primary measure, then many would be granted marquee space. The purpose of the following lines is to express sincere appreciation to my co-workers in this endeavor. Your steadfast support, constructive guidance, and professional insights helped me complete a scholarly work that far exceeded my abilities. Any goodness that accrues to this study is in large measure yours—the shortfalls are mine alone.

First, my thanks go to Dr. Bryan Cole. As a man of highest academic standards and of faith, you provided an unwavering benchmark of quality. You were the constant beacon to orient my steps when the “fog of war” closed on all sides. My hope is that at some point in the future, my posture of faith and professional excellence can be only one-half yours.

Second in listing, but not by importance—I want to express thanks to my wife, Miyong. You had the vision of this honor long before I could even dimly conceptualize the beginning of a doctoral program. Thank you for providing the best environment imaginable for the years required to complete this study. Even more, thank you for putting on hold your interests and professional development. My hope

is that from this point forward, my total effort can be focused to helping you achieve your dreams.

I want to extend a large measure of thanks to two professional colleagues who have been powerful inspirations. First, Dr. Norma Guerra, for opening doors and for sharing your experiences in ways that put me on the path to Texas A&M University. Absent you, my interest in beginning this doctoral program would have remained nascent. Second, Brandi Plunkett for sharing ideas in conversations that at once were scholarly, practical, and enjoyable. The times are too numerous to count when you asked the right question, bounded a thought into an idea, and offered words of encouragement. The blessing to have one colleague of such stature and importance as each of you points to the wealth the two of you brought to my life.

A special note of thanks must go to Dr. Lloyd Korhonen and the staff of the Center for Distance Learning Research (CDLR) at Texas A&M University. Dr. Korhonen made available server support and the technical assistance necessary to conduct a web-based study. The CDLR Web team of Sentil Venkataraman and Abey George transformed general research concepts into an integrated system of Web pages and databases. The process of developing and executing a Web-based project was an invaluable educational experience—you were the best at making complex concepts understandable! Likewise, a special note of thanks must go to Mr. Bill Ashworth. Thank you for guiding me through the administrative process gates from the research proposal through final editing. You were an instructor, confidant, and friend of the highest order.

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To complete acknowledgments to individuals contributing to this study, I want to express thanks to the members of my committee: Dr. Homer Tolson, Dean Richard Chilcoat (Lieutenant General, USA, Ret.), and Dr. Toby Egan. Dr. Tolson, thank you for keeping your door open and for providing me with opportunities to improve my understanding of the research process. Dean Chilcoat, thank you for painting the picture of a master strategist that guided this study and for giving sage counsel in every phase of this project. Dr. Egan, thank you for making my final defense possible by consenting to join my committee near the end of the process. Before joining the committee, you showed an interest in my research by asking questions that helped me maintain focus. In a period of struggle in forming the Delphi panel, you knew exactly who to contact and what to do—thank you for helping me establish the research process with strong momentum. And finally, to a former committee member Dr. Susan Lynham, thank you for opening my eyes to new ways of seeing the world and for gently introducing a necessary tension into my learning. Although you were unable to participate in the final events, you were a guiding influence.

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CHAPTER I

INTRODUCTION

The question remains: Is our professional education program for national security master strategists right for the times? "Throughout history, freedom has been threatened by war and terror; it has been challenged by the clashing of wills of powerful states and the evil designs of tyrants; and it has been tested by widespread poverty and disease" (The National Security Strategy, 2002, p. 3). National security master strategists must bridge the great expanse between developing strategy in times of peace to executing strategy in times of conflict (Murray, 2001). National security master strategists routinely deal with dangerous opponents, work in alliances with unreliable partners, stretch scarce resources up to but not beyond the breaking point, and, prevail within a political environment (Downey & Metz, 1988). National security master strategists face an ongoing challenge to balance contending needs of the domestic environment against deterring or, that failing, defeating external threats to national interests.

In the twenty-first century, the national security vision frames a world that is more than safe—the world must be better. Master strategists pursue goals that include "political and economic freedom, peaceful relations with other states, and respect for

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This dissertation follows the style of the *Journal of Educational Research*.

human dignity" (The National Security Strategy, 2002, p. 1). Political, military, economic, and social domains function as a whole in the twenty-first century. National security objectives are to enable causes for lifting human dignity, prevent or defeat terrorist attacks, build alliances that defuse regional conflicts, prevent opponents from using weapons of mass destruction, spark global economic growth, and transform U.S. security institutions to twenty-first century needs (The National Security Strategy, 2002).

Establishing the Strategist Construct from Military and Business Literature

Strategists are not like other people—they have a long history of answering special calls to duty. Across time and cultures, strategists appear to share both common beginnings in complex situations and cognitive attributes that enable competitive advantage (Rarick, 1996). The modern word for strategist originates in the Athenian title of *strategos* that combines words for army (*stratos*) and for to lead (*aegin*) (Cummings, 1995). The intertwining of security decisions with political, economic and military affairs led to the creation of the strategist position (Cummings, 1995). In the Greek tradition, wisdom is the distinguishing trait among strategists and "one's ability to combine political acumen and practical intelligence" (Cummings, 1995, p. 23) is the measure of wisdom. Chen (1994) gives a similar account in describing classical Chinese notions of a strategist that derive from combining words for soldier and doctrine. The Chinese concept translates to English as *the art of war*. In the Chinese tradition, victory in its highest form comes from superior generalship not from war. Among Chinese strategists, the distinguishing characteristics are to be

aware of changing circumstances, judge implications of situations and seize opportunities without hesitation.

In describing master strategists in a competitive business environment, Ohame (1982) states that a "mind working to achieve relative position works different from a mind working to make internal improvements with reference to an absolute model" (p. 37). The mind of a master strategist is multidimensional—operating simultaneously in the dimensions of time, space and matter. In contrast to normal tendencies that narrow the field of vision during times of crisis, a master strategist will use peripheral vision to bring alternatives into clear focus. Likewise, the master strategist is a pragmatist with an innate distrust of definitive responses to complex issues. In decision-making, the master strategist brings an awareness of emerging trends and develops alternatives that tip the competitive balance at the optimal moment in time. The mind of a master strategist shows one obsession—to focus thinking on the factors of success. Von Oetinger (2001) agrees that master strategists think differently from other people. He observes that master strategists have the rare cognitive ability to recognize true creativity that rains surprise on one's opponents.

In a historical military study that spans from classical Chinese to the Gulf War, Metz (1991) describes strategists in terms of timeless and essential features. Strategists operate in a dynamic environment to fulfill roles that include assessing, creating, mobilizing, integrating, and coordinating resources in ways to achieve organizational goals. Strategists develop through three distinct phases. Phase one, mastery, deals with developing intellectual capacities to understand the nature and factors of success. Phase two, transcendence, concerns creativity or independent

thinking to stretch their cognitive capacities beyond the "strategic paradigms that dominate their age" (p. 51). Phase three, consummation, speaks to the strength of character that enables the strategist to influence the thinking of both internal and external stakeholders.

Chilcoat (1995) describes master strategists with cognitive and behavioral competencies to think and act simultaneously as strategic leaders, strategic theoreticians, and strategic practitioners. Master strategists think and act within a "be, know, do" holographic framework. The strategic leader role "provides vision and focus, capitalizes on command and peer leadership skills, and inspires others to think and act" (p. 8). The master strategist in this role coordinates ends, ways and means. The master strategist as strategic leader must demonstrate three "be" traits. The first is to be intimately familiar with the organizational climate. Every organization has inherent biases that frame perceived reality. Institutional biases are mental maps to embrace some approaches, naturally oppose other practices, and to discount some information as not relevant. The master strategist develops situational awareness as an ongoing "job one." The second is to be an example in openness to meaningful development. Leading involves living continual development over merely prescribing development for others. The strategic leader is by nature and function a vested participant rather than an expert consultant. The third is to be an ethical person. People and institutions have values that require respect. Development emerges with inherent values. A strategic leader's ethical behavior is an inside-out state of being. Parker (1931) suggests that the strategic leader's role encompasses both personal and professional as well as life and work issues. A strategic leader

must understand and leverage family influences, school influences, and individual experiences as well as personal and organizational values, ethos, and vision.

In the strategic theoretician role, the master strategist "studies the history of warfare, develops strategic concepts and theories, integrates them with the elements of national power ... and teaches or mentors the strategic art" (Chilcoat, 1995, p. 9). The master strategist in the theoretician role formulates ends, ways, and means. In the "know" component of the framework the effective strategic theoretician demonstrates competence in three mutually supporting domains. The first is psychology in regards to how organizations and individuals improve through learning. The second is systems to understand interrelationships between national and international components that impact security objectives, the operating environment, and formal as well as tacit knowledge. The third is to bring knowing and competencies together in a holistic setting of organizational structures, social setting, and resource allocation practices (Chilcoat, 1995). Sanchez and Heene (1997a) describe strategic theoreticians in terms of building and leveraging competences. Leveraging is a procedural based activity that entails exploiting opportunities for directing integration of all available tools for goal-seeking activities. Building is the creative process by which a strategic theoretician expands viable options that can be translated into goal-directed activities.

The strategic practitioner "develops a deep understanding of all levels of war and strategy and their interrelationships, develops and executes strategic plans ... employs force and other dimensions of military power, and unifies military and nonmilitary activities through command and peer leadership skills" (Chilcoat, 1995, p. 8). The

strategic practitioner applies ends, ways, and means. The strategic practitioner is in the "do" component of the framework. All of the qualities of "being" and "knowing" become personal qualities in the "doing." The "do" component involves the competency to integrate all national security structures and practical activities in ways that achieve strategic goals (Chilcoat, 1995).

Professional Military Education: Setting the Scene

Arnold (1993) traces the roots of professional military education in Europe back to the late eighteenth century. U.S. professional military education at the pre-commissioning level extends back to 1802 with the founding of West Point, the U.S. Military Academy. Military and civilian leaders have wrestled with concerns over how to improve professional military education in terms of quality and effectiveness for pre- and post-commissioning levels since before the Civil War. The modern-era professional military education system traces back to 1898 when Elihu Root, Secretary of War, instituted reforms across the War Department. The professional military education component of the Root Reforms expanded West Point enrollment, established a combined staff school at Fort Leavenworth for mid-career officers, and opened the Army War College as an institution of higher military education for senior officers.

In 1945 the Secretary of War and Joint Chiefs of Staff commissioned the Gerow Board to evaluate professional military education. The Gerow Board members found that national security in a post-World War II world brought requirements for officers to be proficient in joint service operations as well as to employ power having

military, economic, political, cultural, and technological components. Based on the Gerow Board's recommendations, the Joint Chiefs, in 1946, established a National Security University. The National War College component was designed as an advanced professional military institution for the study of the use of national power and to develop national security policy (Arnold, 1993).

The Emergence of Requirements for Master Strategists

The Department of Defense Reorganization Act of 1986 (Public Law 99-433), among other issues, outlined a wide-ranging set of requirements to improve professional military education. The Act placed emphasis on professional military education for officers assigned to senior government officials as their advisors in national security matters. In the succeeding months members of Congress began to doubt that the professional military education system would unfold according to their vision. So, in November 1987, the Chairman of the House Armed Services Committee appointed a Panel on Military Education and named Representative Ike Skelton as the chair. The Skelton Panel Report provides numerous findings and recommendations concerning professional military education for master strategists (Barrett, 2000).

The Skelton Panel found that strategy occupies two planes, one basic, and the other applied. Basic strategy is the domain of theoretical strategists who must be capable of conceptualization and innovation. Theoretical strategists are more difficult to develop and are fewer in number. On the other side, applied strategists are problem solvers. In relation to theoretical strategists, applied strategists are easier to

develop and more numerous. The Panel envisioned theoretical strategists feeding fresh concepts to practical problem solvers, "who otherwise would starve intellectually" (*Report on Military Education*, 1989, p. 28). The Panel referred to theoretical strategists as "true strategists" (*Report on Military Education*, 1989, p. 29).

The professional education system building blocks for true strategists must include competencies that extend beyond war fighting skills. True strategists must understand the capabilities of all services and the characteristics of joint commands. True strategists must have competencies in tactical operations as well as operational art to combine all components of national power. The professional education system must have a multidisciplinary outlook and bring an understanding of the reciprocal relationships between and among history, international relations, political science, and economics (*Report on Military Education*, 1989).

The Skelton Panel's description of theoretical strategists is consistent with the concept of strategic thinkers in business literature (Ohame, 1982; von Oetinger, 2001). Mintzberg (1994) likens applied strategists with strategic programmers who make plans and seek to quantify discrete performance measures. Programmers work from the perspective of expert planners to elaborate existing strategies and visions. In contrast, Mintzberg (1994) associates theoretical strategists with strategic thinkers who are more adept at synthesis, intuition and creativity. Thinkers bring a perspective that integrates multiple points of view into a "not too precisely articulated vision of direction and how to get there" (p. 108).

The Skelton Panel drew from a broad range of expert testimony in outlining the competencies they believed would support the development of true strategists. The Panel's findings stipulate that true or master strategists must have four basic competencies. First, true strategists must be analytical—see beyond facts and find the underlying relationships. Second, they must be pragmatic—aware of emerging trends and of the need to continually revalidate strategic constructs. Third, master strategists must be innovative – able to challenge and change the status quo. Finally, they must think strategically on domestic and international trends in political, technological, economic, scientific, and social issues. The professional military education system must provide a broad educational setting to develop applied strategists, and more importantly, provide opportunities to develop true, master strategists (*Report on Military Education*, 1989).

The Framework of the Professional Military Education System

The Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01A (2000) establishes the professional military education system and follows the Skelton Panel's framework. The vision for professional military education holds that "the U.S. military of the future must channel the vitality and innovation of its people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting" (p. 1). The professional military challenge is to ensure stability in the current and near-term while preparing for the future. The instruction admonishes all officers to "make a continuing, strong personal commitment to their professional development beyond the formal schooling offered in our professional military

education system" (p. A-1). The professional military education system aim is to produce "critical thinkers who view military affairs in the broadest context and are capable of identifying and evaluating likely changes and associated responses" (p. A-B-1). Furthermore, the system aim is to provide "senior officers who can develop and execute national military strategies that effectively employ the Armed Forces in concert with other instruments of national power to achieve the goals of national security strategy and policy" (p. A-B-1).

CJCSI 1800.01A (2000) establishes a professional military education system that generally aligns with strategy development models in business literature. At the intermediate level in service staff colleges, officers at the mid-career mark focus on joint operations from a Service component perspective. Students focus on Service component operations at the tactical and operational levels. The five learning areas and objectives in Table 1 draw attention to the Service component perspective of structure and available resources as the keys to effective strategy. In business literature, proponents of the strategy-structure-performance (SSP) model highlight the same variables. According to the SSP model, proper alignment of available resources to internal structure leads to the optimal strategy (Chandler, 1962).

TABLE 1. Service Intermediate Level College Learning Areas and Learning Objectives (CJCSI 1800.01A, 2000, pp. E-B-1 to E-B-3)

Learning Area 1: National Military Capabilities and Command Structure
a. Comprehend the capabilities and limitations of US military forces.
b. Explain the organizational framework within which joint forces are employed.
c. Explain the purpose, roles, functions, and relationships of the National Command Authority, National Security Council, Chairman of the Joint Chiefs of Staff, Joint Chiefs of Staff, combatant commanders, joint force commanders, and combat support organizations.

TABLE 1. Continued

Learning Area 1: National Military Capabilities and Command Structure
d. Summarize how joint force command relationships and directive authority for logistics support joint war fighting capabilities.
e. Comprehend how the US military is organized to plan, execute, sustain, and train for joint, interagency, and multinational operations.
Learning Area 2: Joint Doctrine
a. Comprehend current joint doctrine..
b. Understand the factors influencing joint doctrine.
c. Formulate and defend solutions to operational problems using current joint doctrine.
d. Comprehend the relationship between Service doctrine and joint doctrine.
Learning Area 3: Joint and Multinational Forces at the Operational Level of War
a. Comprehend the considerations for employing joint and multinational forces at the operational level of war.
b. Explain how theory and principles of war apply at the operational level of war.
c. Develop an ability to plan for employment of joint forces at the operational level of war.
d. Comprehend the relationships among national objectives, military objectives, and conflict termination, as illustrated by previous wars, campaigns, and operations.
e. Comprehend the relationships among the strategic, operational, and tactical levels of war.
Learning Area 4: Joint Planning and Execution Processes
a. Through the framework provided by joint planning processes, explain the relationship between national objectives and means availability.
b. Comprehend the effect of time, coordination, policy changes, and political developments on the planning process.
c. Explain how defense planning systems affect joint operational planning.
d. Comprehend how national, joint, and Service intelligence organizations support joint force commanders.
e. Comprehend the fundamentals of campaign planning.
Learning Area 5: Information Operations (IO) and Command, Control, Communications and Computers (C4)
a. Understand how command, control, communications, computers, intelligence, surveillance, and reconnaissance systems apply at the tactical and operational levels of war and how they support a joint information operations strategy.
b. Comprehend how IO must be integrated to support national and military strategies.
c. Comprehend how IO is incorporated into both the deliberate and crisis action planning processes at the operational and joint task force levels.
d. Comprehend how opportunities and vulnerabilities are created by increased reliance on information technology throughout the range of military operations.

At the senior level in service war colleges, students focus on the strategic environment to understand its impact on developing and implementing strategy. Senior level professional military education focuses on strategy and the art and

science of developing and using all instruments of national power during periods of war and peace. The six learning areas and objectives in Table 2 focus on the strategic environment to understand its impact on developing and implementing strategy at the level of operational art. Curriculum for the Service Senior Level Colleges emphasizes variables that business literature discusses in the structure-conduct-performance (SCP) model. According to the SCP model, variables in the external operating environment, such as industry structure, are the determining factor in achieving competitive advantage (Porter, 1991).

TABLE 2. Service Senior Level College Learning Areas and Learning Objectives (CJCSI 1800.01A, 2000, pp. E-C-1 to E-C-3)

Learning Area 1: National Security Strategy
a. Analyze the strategic art; i.e., developing, applying, and coordinating the instruments of national power to secure national security objectives.
b. Comprehend how national policy is turned into executable military strategies.
c. Analyze how the constituent elements of government and American society exert influence on the national strategy process.
Learning Area 2: National Planning Systems and Processes
a. Comprehend the Department of Defense systems and processes by which national ends, ways, and means are reconciled, integrated, and applied.
b. Analyze how time, coordination, policy, politics, doctrine, and national power affect the planning process.
c. Analyze and apply the principal joint strategy development and operational planning processes.
d. Comprehend the role of joint doctrine with respect to unified command.
Learning Area 3: National Military Strategy and Organization
a. Comprehend the art and science of developing, deploying, employing, and sustaining military resources of the nation, in concert with other instruments of national power, to attain national security objectives.
b. Analyze the roles, relationships, and functions of the National Command Authority, Chairman of the Joint Chiefs of Staff, Joint Chiefs of Staff, Commanders in Chief (CINC), Secretaries of the Military Departments, and the Service Chiefs.
c. Comprehend how the capabilities and limitations of the US force structure affect the development of joint military strategy.

TABLE 2. Continued

Learning Area 4: Theater Strategy and Campaigning
a. Comprehend how joint, unified, and multinational campaigns and operations support national objectives.
b. Comprehend the role and perspective of the unified commander and staff in developing various theater plans, policies, and strategies, including current issues of interest to the CINCs.
c. Analyze joint operational art and, especially, its application via the joint task force.
d. Comprehend how to coordinate US military plans and actions effectively with forces from other countries and with interagency and non-governmental organizations.
e. Comprehend the value of integrating information operations into theater strategies and campaigning.
Learning Area 5: Information Operations and Command, Control, Communications, and Computers (C4)
a. Understand information and C4 concepts and how they relate.
b. Demonstrate a thorough understanding of how information operations and C4 are integrated to support the National Military and National Security Strategies and interagency process.
c. Demonstrate how information operations and C4 are integrated into the theater and strategic campaign development process.
d. Understand how the joint operational planning and execution system is integrated in theater and operational information operations campaign planning and execution to support theater and national strategic sustainment and warfighting efforts.
Learning Area 6: The Role of Technology in 21st Century Warfare
a. Comprehend how technological change affects the art and science of war and evaluate key ongoing and anticipated technological developments pertinent to the military instrument.
b. Analyze Joint Vision 2020 and the nature of warfare in the information age, to include examining key current developments.

At the National War College, students come to view the internal and external security environment components as an interrelated whole (CJCSI 1800.01A, 2000; *Report on Military Education*, 1989). According to CJCSI 1800.01A (2000), The National War College has a charge to produce "national security practitioners who can develop and implement national security holistically by orchestrating all instruments of national power in a coherent plan to achieve national objectives in peace, crisis, or war" (p. E-D-1). The goal is to provide graduates with "habits of mind, conceptual foundations and critical faculties for the highest level of strategic

responsibility" (p. E-D-1). The National War College learning areas and objectives in Table 3 highlight the unique attributes of specialized national systems, processes, and resources. The National War College learning areas align with the Resource Based View (RBV) with emphasis on developing and employing resources that are unique, difficult to imitate, and that have no substitute (Barney, 1991).

TABLE 3. National War College Learning Areas and Learning Objectives (CJCSI 1800.01A, 2000, pp. E-D-1 to E-D-3)

Learning Area 1: National Security Strategy
a. Analyze the interrelationships among ends and means and the ways in which available means can be applied to achieve desired objectives.
b. Apply analytical frameworks to the formulation and evaluation of strategy.
c. Evaluate the current US National Security Strategy, as well as other examples of national security strategies.
d. Develop effective national security strategies for specific security challenges and prepare national-level implementing guidance.
Learning Area 2: Geo-Strategic Context
a. Comprehend the major social, cultural, political, economic, military, technological, and historical issues in selected states and regions.
b. Comprehend the roles and influences of international organizations and other non-state actors.
c. Evaluate key military, non-military, and transnational challenges to US national security.
d. Conduct strategic assessments of international regions, states, or issues from both US and selected "other actor" perspectives.
Learning Area 3: Instruments of National Power
a. Comprehend the fundamental characteristics, capabilities, and limitations of diplomatic, economic, military, and informational instruments of national power.
b. Investigate concepts and approaches for the employment of diplomatic, economic, military, and informational instruments in support of national security strategy.
c. Evaluate selected examples of strategies employing each of the instruments.
d. Evaluate examples of the orchestration of instruments of power in pursuit national security objectives.
Learning Area 4: National Security Policy Process
a. Comprehend the philosophical, historical, and constitutional foundations of the national security establishment and process.
b. Comprehend the origins and evolving role, responsibilities, organization, and modus operandi of the National Security Council system.
c. Analyze how the major governmental and nongovernmental institutions influence, formulate, and implement national security strategies and policies.
d. Explain how the US government prioritizes among issues, accommodates competing demands, and allocates responsibilities for developing appropriate national-level strategies.
Learning Area 5: National Military Strategy
a. Analyze the nature of war and its evolving character and conduct – past, present and future.
b. Apply classical and contemporary theories of war to current and future strategic challenges.
c. Comprehend the key considerations that shape the development of national military strategy.
d. Evaluate the current National Military Strategy, as well as other examples of US and foreign military strategies.

TABLE 3. Continued

Learning Area 5: National Military Strategy
e. Comprehend the organization, responsibilities, and capabilities of the military Services and the process by which operational forces are employed by combatant commanders.
f. Comprehend the DOD process for strategic planning and assessment for both long-term and immediate security challenges.
g. Develop an effective national military strategy for a specific security challenge, and conduct strategic implementation planning.

Professional Education Needs from Military and Business Literature

R. A. Chilcoat (personal communication, March 24, 2003), a former President of the National Defense University, notes that the professional military education curriculum of instruction supports the master strategist competencies to be analytic, pragmatic, innovative and creative. While holding the professional military education curriculum in high regard, Reed, Bullis, Collins, and Paparone (2004) and Galvin (1995) question the adequacy of any traditional professional education system to develop strategists with competencies to drive deep analytic thought, create new ideas, and bring perspective to the strategy development process. In view of recent military and business literature that clarify the mind of a strategist and the challenges that strategists face, Reed et. al.'s (2004) and Galvin's (1995) doubts appear valid.

CJCSI 1800.01A (2000) sets the vision for a professional military education system that leads to a state of continual learning—for individuals and for their institutions. Thus, professional military education is an evolving concept. Chilcoat (1999) agrees and admonishes that professional military education must "keep abreast of the times—it must lead, not lag behind change" (p. 59). Reinforcing this line of thought, Schön (1995) argues the need to reorient the foundation principles of

professional education from a linear, technical-rational knowledge base as well as to redefine the nature of professional practice. He challenges the longstanding belief that professionals solve problems through the application of specific sets of knowledge. He argues that reflection-in-action and reflection-about-action are vital to the process of professional development.

Cheetham and Chivers (2000) find support for the proposition that professional practice involves more than theoretical knowledge. Likewise, they find support for the contention that professionals do reflect on problems and performance outcomes as a way to improve practice. The professional education challenge in all fields is less in deciding curriculum content and more to imbed the open ended question—how do I improve my practice?

Professional education that produces master strategists is less a meta-curriculum (Cheetham & Chivers, 1998) and more a framework of relationships between competencies that describe the strategic leader, theoretician, and practitioner (Chilcoat, 1995). The notions of theory and practice constitute a dialectic leading to designed outcomes that Jarzabkowski (2003) describes as strategic activity. Strategic activity represents outcomes that are rigorous in a scholarly sense, practical in application, and open-ended in practice (Cheetham & Chivers, 1998; Lester, 1995; Schön, 1987).

In developing the notion of open-ended practice and an emerging professional education system, a wide range of literature (Cheetham & Chivers, 1998; Chilcoat, 1999; Lester, 1995; Schön, 1987) points to four competencies extending beyond traditional programs. The first involves highly refined cognitive executive processes

that Sternberg (1997) describes as competencies to develop, plan, monitor, and evaluate problem solving. The second involves comprehending time as a construct that Bergson (1913) frames as a multi-dimensional perception as well as a linear chronological reality. The third competency concerns the theory of profound knowledge. According to Deming (1994) profound knowledge theory holds that an understanding of systems theory, theory of variation, theory of psychology, and theory of knowledge are integrated to form a holistic perspective. Finally, professional education serves to heighten a need for cognitive activity to "structure situations in meaningful, integrated ways" (Cacioppo & Petty, 1982, p. 116).

The professional military education system coupled with professional experience must produce master strategists with competencies to fulfill simultaneously the three critical roles of strategic theoretician, leader, and practitioner (Chilcoat, 1995). Cheetham and Chivers (1998) expand the notion of professional education in a model that frames competencies in four distinct domains—cognitive, functional, personal, and shared values. Cognitive competencies concern theoretical, tacit, and procedural knowledge. Functional competencies deal with understanding organizational processes as well as having the mental and physical qualities to perform specific roles. Personal competencies integrate traits of persistence with intra-personal and intra-professional communication abilities. Shared values or ethical beliefs incorporate personal and professional belief systems into a functioning whole.

A professional military education system following the Cheetham and Chivers (1998) competency framework supports master strategist contributions that include "habits of mind, conceptual foundations, and critical faculties for the highest level of

strategic responsibility" (CJCSI 1800.01A, 2000, p. E-D-1). Professional military education that follows a systemic competency framework instills the inclination to think along recursive positive and negative feedback loops (Chilcoat, 1995; Forrester, 1968). A systemic professional education framework refines focus on understanding the capabilities of all national instruments of power, analytic frameworks from scholarly literature as well as from practice, and, a keen sense of the importance of integrating theoretical knowledge with experiences drawn from professional practice (Briscoe & Hall, 1999; Chilcoat, 1995; Lester, 1995; Schön, 1987).

Summary of the Introduction to Master Strategists and Professional Education

There are deep and substantive concerns with the abilities of our current professional military education system to provide theoretical strategists (Chilcoat, 1999; Galvin, 1995; Kenney, 1996; Reed et. al., 2004). In military and business literature there are descriptions of a unified master strategist construct that requires competencies beyond the design of existing professional educational programs (Cheetham & Chivers, 1996; Chilcoat, 1995; Lester, 1995; Metz, 1991; Reed et. al., 2004). The Skelton Panel's admonition to design a system that supports the development of theoretical strategists again rings true (*Report on Military Education*, 1989). The development of a competency framework for national security master strategists can help to establish the knowledge bank that informs a professional education program that meets the intent of CJCSI 1800.01A as well as the Skelton Panel's vision for true strategists (*Report on Military Education*, 1989).

Statement of the Problem

Professional military education has the charge to develop master strategists with competencies to be analytic, pragmatic, innovative and creative (*Report on Military Education*, 1989). Master strategists must engage in non-linear thinking, adopt a systems view of the organization and take a long-term perspective (CJCSI 1800.01A, 2000; Hitt, Keats, & DeMarie, 1998; Sanchez, 2002). In contrast, professional education programs for military as well as business strategists tend to emphasize linear thinking and a near-term perspective (Hitt et al., 1998; Lester, 1995; Mintzberg, 1990). Likewise, the research that supports professional education programs tends to rely on observable and objective variables that are increasingly distant from those strategists use in deciding to leverage current assets or to build new competencies (Farjoun, 2002; Sanchez & Heene, 1997a). In national security and in business, master strategists must be adept in dealing with change that emerges from ambiguous beginnings, accelerates with increasing speed, and that exists on a plane of unprecedented complexity (Chilcoat, 1999). In matters of national security, there is a pressing need to rebuild intellectual capital that enables master strategists to bring balance in three domains: (1) knowledge tools for thinking and doing; (2) problems remaining from history and present realities; and, (3) economic, political, and security strategies (Kupchan, 2002; Reed et. al., 2004). While there is abundant capacity to produce applied, problem solving, strategists, the problem is the absence of a competency framework to guide systemic professional education and development of theoretical, master strategists (Cheetham & Chivers, 1996; Chilcoat, 1995; Lester, 1995; Metz, 1991; Mintzberg, 1990).

Purpose of the Study

The purpose of this study was to develop a systems framework to guide the professional education of master strategists. Specifically, this study was designed to identify (1) content domains of the most important questions that lead to identifying future competencies of a master strategist; (2) the contribution that each of the most important questions brings to the design of a master strategist professional education program; and, (3) the most important competencies in the professional education framework for master strategists.

Research Questions

This study was conducted to address the following questions.

1. What are the content domains of the most important competencies of a master strategist as perceived by qualified professional strategists?
2. How do questions to identify the most important competencies inform development of a professional education program for master strategists as perceived by qualified professional strategists?
3. What are the most important competencies of a master strategist as perceived by qualified professional strategists?

Operational Definitions

Assets: All tangible and intangible resources a unit uses in processes to create or produce an outcome. Tangible resources include machines, buildings or anything that is observable and touchable. Intangible assets are non-physical

things such as intellectual property rights, reputation and capabilities (Sanchez & Heene, 1996).

Competence: The defining characteristics in terms of required knowledge and qualities an individual must possess for a designated role (Anderson, 1975; Sternberg, 1996a). "The ability to sustain the coordinated deployment of assets in a way that helps a firm to achieve its goals" (Sanchez & Heene, 1996, p. 8).

Content Domain: Categories of similar ideas relating to knowledge, skills and understanding; help respond to the question what do we need to know and ensure that all master strategists and instructors have proficiency (Connect, 1997). Content domains were used as a way to assemble similar themes and patterns imbedded in questions Delphi panel members developed during the data collection phase of this study (Marshall & Rossman, 1995; Tukey, 1962).

Framework: The patterns of relationships that are like mapping. The basic level of a static structure and the first step in "the beginning of organized theoretical knowledge" (Boulding, 1956, p. 202).

Master Strategist: One who is proficient in the strategic art—skillfully formulating, coordinating and applying ends, ways, and means to achieve goals. One who has capabilities to fulfill simultaneously the roles of strategic leader, strategic practitioner and strategic theoretician (Chilcoat, 1995). "A pattern recognizer, a learner" (Mintzberg, 1987, p. 73). A decision-maker with competencies to identify critical tasks, gain consensus, construct an

inspiring vision and provide a focal point on which to coordinate performance (Cummings, 1995; Tsoukas & Cummings, 1997).

National Military Strategy: The art and science of distributing and applying the military to attain the national objectives in peace and war" (CJCSI 1800.01A, 2000, p. GL 6).

National Security Strategy: "The art and science of developing, applying, and coordinating the instruments of national power (diplomatic, economic, military, and informational) to achieve objectives that contribute to national security" (CJCSI 1800.01A, 2000, p. GL 6).

Operational Art: "The employment of military forces to attain strategic and/or operational objectives through the design, organization, integration, and conduct of strategies, campaigns, major operations, and battles." Activity as the operational art "translates the joint force commander's strategy into operational design, and ultimately, tactical action, by integrating the key activities of all levels of war" (CJCSI 1800.01A, 2000, p. GL 6).

Operational Level of War: "The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations" (CJCSI 1800.01A, 2000, p. GL 6).

Organizational Competence Building: "Any process by which a firm achieves qualitative changes in its existing stocks of assets and capabilities, including new abilities to deploy and coordinate new or existing assets and capabilities" (Sanchez & Heene, 1996, p. 8).

Organizational Competence Leveraging: The use of existing competencies "in ways that do not require qualitative changes in the firm's assets or capabilities...or may require quantitative changes in stocks of like-kind assets" (Sanchez & Heene, 1996, p. 8).

Professional Development: The ways new learning comes to be. Responds to the question how do we design, deliver and evaluate professional development from a best practices perspective (Connect, 1997).

Professional Education: Systematic intellectual development. A multi-phased program that leads to increasing levels of wisdom and judgment that can be applied in a wide range of situations (Kenney, 1996). Professional education attends to intangible constructs such as wisdom, judgment, and creativity (Simons, 2000). Master strategist professional education develops meta-cognitive abilities or meta-competencies that enable life-long, just-in-time learning (Chilcoat, 1999; Kenny, 1996; Lester, 1995).

Professional Strategist: An individual who demonstrates an "integrated and systemic approach to the formulation and execution of strategy" (Chilcoat, 1995, p. 1).

Strategic Level of War: "The level of war at which a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives." Strategic level activities "establish national and multinational military objectives; sequence initiatives; define limits and assess risks" (CJCSI 1800.01A, 2000, p. GL7).

System: A grouping of parts that work together to achieve a common aim. Systems include human as well as non-human or mechanical parts (Forrester, 1968).

Tactical Level of War: T he level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces." Tactical level operations "focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives" (CJCSI 1800.01A, 2000, p. GL 8).

Assumptions

1. The interpretations coming from this study will accurately reflect the actual perceptions intended by the participants.
2. The methodology will produce information required for the research questions.
3. The operational definitions provide accurate constructs.
4. Knowledge will be the primary ingredient of growth in the information or digital age (Kupchan, 2002) and life-long earning will be the optimal approach to develop relevant knowledge.
5. The organizational strategy development process will be neither comprehensive nor linear (de Wit & Meyer, 1998).
6. The content of organizational strategy will be differentiated to account for cultural, temporal and cognitive differences (de Wit & Meyer, 1998).

7. The master or theoretical strategist will require a unique professional development process, content and contextual setting (*Report on Military Education*, 1989).
8. The master or theoretical strategist will be simultaneously aware of and competent in the roles of strategic leader, strategic theoretician and strategic leader (Chilcoat, 1995).

Limitations

1. This research project was bound by its context. The findings may not be generalized outside a national security setting. The results may be transferable depending on the similarity of goals to achieve competitive advantage.
2. The scope of this study was limited to perceptions of a panel of experts with backgrounds in national security and interest in developing master strategists.

Significance of the Study

The future professional education needs of master strategists lack clear definition (Chilcoat, 1999; Kenney, 1996; Kupchan, 2002). This study will help in bringing clarity to the most important competencies that master strategists will need in the coming decades. The line of inquiry in this study will focus on the most important competencies for master strategists through the perceptions of a panel of professional strategists. The results of this study will provide a framework that shows evolving linkages that connect master strategist roles and core competencies. This study will help in the design of a professional education system for master strategists that keeps

pace with demands that have and continue to undergo significant change from past professional development requirements.

CHAPTER II

THE REVIEW OF LITERATURE

This review of literature has the aim of developing a competency framework blueprint to guide professional education and development of master strategists. The review has six major headings. The first section is a description of the national security operating environment. These sources describe characteristics of the Information Age and implications for professional practice and education. The second section is a discussion of ways to define competency. These sources discuss a range of critical factors that influence a competency definition. The third section binds issues in the previous sections in a theory base of a competency framework for professional education in the Information Age. The sources describe a cognitive processing theory, a theory of situated practice and learning, and a competency-based competitive organization theory. The fourth section is an overview of competency models. The sources discuss generic models as well as a management model and a holistic model. The fifth section is a description of a professional education framework. The sources represent different approaches to professional education. The final section is a summary of the review of literature.

Introduction to the National Security Operating Environment

Over the past twenty-plus years, scholars have been describing some astounding breakthroughs in information technology that have removed centuries old constraints of time and space. The world has become smaller as the far corners of the earth are

increasingly accessible through satellite communications. The Internet, intranets, electronic-mail, and wireless computers are inherent both to language and daily activities (Toffler, 1980). New sources of knowledge and ways of knowing are emerging and all are not yet fully apparent (Schwartz & Ogilvy, 1979). Successful professional practitioners in this post-industrial world are becoming less members of a clearly defined domain of expertise and more individuals with heightened abilities to be continual learners with an ever evolving portfolio of experiences and competencies (Lester, 1995). The world of professional education is fully entwined with the Information Age (Nadler & Tushman, 1999). Professional education faces a challenge to "develop a competency in the design and leadership" of strategist teams (Nadler & Tushman, 1999, p. 59).

Schwartz and Ogilvy (1979) observe that Information Age professionals must move beyond thinking about a particular phenomenon in a series of thoughts on one level. Now, thinking involves "not just more and different thoughts ... but a meta-leap to meta-laws ... thinking about thinking and knowing" (p. 4). Two decades later scholars continue to believe that learning in a post-industrial age is more difficult. Patterns of knowledge are changing. The learning environment presents complicated causal relationships and reciprocal interactions that mask feedback from professional practice (Lee, 2001; Lei, Hitt, & Bettis, 1996).

Prahalad and Hamel (1990) find that the most powerful tool for achieving competitive advantage remains invisible to many executives. In the current operating environment, professionals are evaluated on their abilities to "identify, cultivate, and exploit the core competencies that make growth possible" (p. 79). Sternberg (1997)

agrees that the explosion of declarative and procedural knowledge make impossible full mastery of all that is known within any given professional domain. As a result, the ability to think creatively is more important today than at any previous point in time.

Hodgetts and Luthans (1999) urge twenty-first century professional practitioners to understand that strategy is no longer a set piece of moves based on an ideal organizational structure (Chandler, 1962), superior analysis of the external operating environment (Porter, 1991), or assembly of unique resources (Barney, 1991). Professional practitioners must appreciate change as a necessary component of success and that strategy "is not a single simple approach but rather a collection of moves that are loosely linked in a semi-coherent strategic direction" (Hodgetts & Luthans, 1999, p. 12).

Executives in the twenty-first century have a primary role to link professional competencies and organizational resources in ways that create competitive advantage (Hodgetts & Luthans, 1999). Strategy literature discusses the importance of leveraging competencies. The weak link in competency literature involves ways and means to strengthen and diversify competencies (Chakravarthy, 1997).

Professional competencies having solid connections to organizational mission and goals provide a solid foundation for developing high performing executives as well as a competitively dominant organization. Competencies also represent a strategic asset for building a specific organizational culture. Whether driven by goals to improve efficiency, effectiveness, productivity, profitability, or world-class customer service, the combination of two components is critical: developing people to execute mission

requirements and creating a supporting culture (Rodriguez, Patel, Bright, Gregory, & Gowing, 2002).

Briscoe and Hall (1999) demonstrate viability of the competency approach to professional education from interviews with directors of executive development in thirty-one North American companies. All the executives affirm intentions to rely on competency frameworks to inform executive selection and development. Executives in forty-five percent of the organizations state they are "somewhat more or substantially more" likely to rely more on competency frameworks in the future. Results from this study make clear that executives believe competency frameworks are a reliable and flexible approach for leader selection and development in an increasingly turbulent operating environment. In order to create flexible, adaptable organizations capable of sustaining competitive advantage, there is a pressing need for professional education programs that enable executives to "learn how to learn, independently and continuously" (p. 50).

Rodriguez et al. (2002) competency research in federal government agencies support the Briscoe and Hall (1999) findings. Rodriguez et al. (2002) report that interpersonal skills and teamwork competencies "can be as important as traditional knowledge, skills and abilities" (p. 310) in recruiting, selecting, and developing a high performing workforce. The Rodriguez et al. (2002) findings support a Boyatzis (1982) finding that, as a predictor of success, interpersonal skills and teamwork abilities make an impact similar to traditional knowledge, skills and abilities. Furthermore, Rodriguez et al. (2002) report an emergent, yet strong, interest across

federal government agencies in competency-based professional development initiatives.

The use of competencies to identify high-performing individuals and outstanding executives is a well-accepted approach among human resource developers (Boyatzis, 1982; Spencer & Spencer, 1993; Stoof, Martens, van Merriënboer, & Bastiaens 2002). The foundational assumption is that competency levels and components are best identified through the study of individuals operating within that particular competency domain (Drejer, 2001). Stoof et al. (2002) note that professional organizations show an increasing emphasis on competency beginning at the individual level and broadening to the level of organizational strategy.

Although competency approaches have been empirically validated, there are alternative views on how to define competency as a useful construct. These alternative views will be discussed in the following section.

Defining the Competency Construct

McClelland (1973) receives widespread credit for initiating the competency movement (Barrett & Depinet, 1991; Stoof et al, 2002). According to McClelland' s research, academic aptitude and intelligence tests alone are weak predictors of high job performance or success in life. Rather, the best way to gain insight into performance is to observe what successful people do and ask them to describe what they do. The optimal way to explain performance is to have individuals perform key components of an activity rather than attempt to define and measure an underpinning trait such as intelligence. Furthermore, competencies can be learned and developed over

time while traits and attributes are considered to be relatively constant over time. In contrast to secrecy associated with items on intelligence tests, competencies should be open source and accessible so people can develop necessary competencies. In another break with intelligence tests that typically deal with arcane constructs, competencies associate life goals with work goals in the world people inhabit for real-life.

In order to sort through the literature concerning a competency definition, there is a need to set the stage by discussing two framing words: paradigm and construct. First, paradigms frame our view of reality. A paradigm is a set of rules defining boundaries and describing measures for success (Barker, 1992). Kuhn (1996) observes that paradigms focus our attention on particular details and bring fit between arrangements of concepts and propositions with physical observations. Paradigms become manifest in predispositions to state problems in certain terms, to elevate some data over other data sets, and to promote knowledge that best elaborates the paradigm. Paradigms serve as a lens bringing what individuals think and see into clear focus (Lincoln & Guba, 1985). The scientific and Information Age paradigms underpin the literature for this study. Second, a construct is a non-observable trait or invented variable that explains behavior. The characteristics and qualities individuals assign to a given construct are bound within a word-view—their paradigm (Gay, 1996; Lincoln & Guba, 1985; Westmeyer, 1994). Competency is the primary construct of interest in this study.

The word *competency* is not new. Its heritage reaches back to the year 1596 (Mish, 1995). The dictionary definitions in Table 4 span six decades and share

common perspectives that competence and competency describe a construct dealing with sufficient qualification, fitness, capability, or state of being. Thus, in lay literature, competency is a relatively stable concept. In stark contrast, the definitions from scholarly literature in Table 5 cover a wide continuum. Words that frame concepts of observable and quantifiable phenomena anchor one end of the continuum. Extending along the continuum, words that frame subjective concepts of motivation, effectiveness, thinking, leadership and human-technology systems anchor the opposite end. Stoof et al. (2002) and Brown (1993) agree that scholarly definitions of competency are less stable than the definitions in lay literature. Brown (1993) observes that scholars sometimes give technical meanings to common words. Competency is a word with origins in our common vocabulary that has been adopted as a pacing construct for human resource developers. The scholarly definition process is ongoing. Currently, scholarly definitions run along a continuum anchored on one end by a linear cause and effect relationship extending to a systems view of multidimensional influences.

TABLE 4. Historical Trace of Dictionary Definitions for the Words *Competence* and *Competency*

Source	Competence	Competency
Murray (1933). *Oxford English Dictionary*,	(1) Adequate supply, a sufficiency (2) A sufficiency of means for living comfortably (3) The condition of having sufficient means; easy circumstances (4) Sufficiency of qualification; capacity to deal adequately with a subject (pp. 718-719)	(1) A sufficient supply; a sufficiency (2) A sufficiency without superfluity, of the means of life (3) Sufficiency of qualification, capacity (p. 719)

TABLE 4. Continued

Source	Competence	Competency
Partridge (1938). *MacMillan's Modern Dictionary*	(1) State of being competent; sufficient ability (2) Fitness (3) Sufficiency of wealth for one's needs (p. 191)	(1) State of being competent; sufficient ability (2) Fitness (3) Sufficiency of wealth for one's needs (p. 191)
Scott (1952). *Swan's Anglo-American Dictionary*	(1) Fitness (2) Capability (3) Adequate money or income for one's needs (p. 353)	(1) Fitness (2) Capability (3) Adequate money or income for one's needs (p. 353)
Mish (1995). *Merriam Webster's Collegiate Dictionary*	(1) A sufficiency of means for the necessities and conveniences of life; (2) The quality or state of being competent, as, the properties of an embryonic field that enable it to respond in a characteristic manner to an organizer or readiness of bacteria to undergo genetic transformation; (3) The knowledge that enables a person to speak and understand a language (p. 234)	(1) A sufficiency of means for the necessities and conveniences of life; (2) The quality or state of being competent, as, the properties of an embryonic field that enable it to respond in a characteristic manner to an organizer or readiness of bacteria to undergo genetic transformation; (3) The knowledge that enables a person to speak and understand a language (p. 234)

TABLE 5. A Continuum of Academic Competency Definitions Extending from Observable Scientific Age Paradigm Concepts to Multi-Dimensional Constructivist Information Age Paradigm Concepts

Scientific Age	
Spencer and Spencer (1993)—"an underlying characteristic of an individual that is causally related to criterion-referenced effective or superior performance in a job or situation." (p. 9).	Jacobs (1997)—"the potential of individuals to use specific sets of knowledge and skills ... the relative abilities of individuals with respect to a particular work task or set of related tasks" (p. 304).
Hayes (1979)—a "generic knowledge, motive, trait, self-image, social role, or skill of a person that is causally related to performance on the job" (p. 2).	The defining characteristics in terms of required knowledge and qualities an individual must possess for a designated role (Anderson, 1975; Sternberg, 1996).
Herling (2000)—"displayed behavior within a specialized domain in the form of consistently demonstrated actions of an individual that are both minimally efficient in their execution and effective in their results" (p. 20).	Morf (1986)—"the worker's motivational disposition and abilities that are relevant in the context of work" (p. 15).

TABLE 5. Continued

Scientific Age	
Athey and Orth (1999)—"a set of observable performance dimensions, including individual knowledge, skills, attitudes, and behaviors, as well as collective team, process, and organizational capabilities, that are linked to high performance, and provide the organization with sustainable competitive advantage" (p. 216).	Guion (1991)—"underlying characteristics that indicate ways of behaving or thinking, generally across situations, and enduring for a reasonably long period of time" (p. 335).
Parry (1996)—"a cluster of related knowledge, skills and attitudes that affects a major part of one's job (a role or responsibility), that correlates with performance on the job, that can be measured against well-accepted standards, and that can be improved via training and development" (p. 50).	Lubinski and Dawis (1992)—"the ability to produce more effective and efficient behavior in novel situations" (p. 2).
van der Klink and Boon (2002)—"an empirically validated, systematic description of professional activities within a certain professional domain" (p. 412).	Sanchez and Heene (1997a)—"the ability of an organization to sustain coordinated deployments of resources in ways that promise to help that organization achieve its goals" (p. 7).
Rodriguez, et al. (2002)—"a whole person assessment that incorporates a measurable pattern of knowledge, skill, abilities, behaviors, and other characteristics" (p. 310).	Mirabile (1997)—"a knowledge, skill, ability, or characteristic associated with high performance on a job, such as problem solving, analytical thinking, or leadership" (p. 75).
Albanese (1989)—"a managerial competency is a skill and / or personal characteristic that contributes to effective managerial performance.	Barrie and Pace (1997)—"capacity to think about performance and also to perform." (p. 337).
Rothwell (1996)—"the underlying characteristics of successful performers. It can include bodies of knowledge, skills, traits, abilities, attitudes, or beliefs. In short, a competency is anything that distinguishes an exemplary performer from an average or below-average performer" (p. 263).	Drejer and Riis (1999)—"a system of human beings, using (hard) technology in an organized way and under the influence of a culture to create an output that yields a competitive advantage for the firm" (p. 632).
	Information Age

Defining Competency in the Scientific Paradigm

On one hand is the set of competency definitions that devolve from an "objectivist" or scientific perspective. The scientific paradigm seeks to remove variation inherent to individual choice and elevate quantifiable data as the basis for

performance improvement (Gay, 1996). The scientific paradigm proponents tend to develop the construct from a basic belief that there is one objective, absolute truth. The objectivist perspective seeks to establish optimal observable and causal qualities to the competency construct. The objectivist or scientific approach assumes that reality exists under control of natural laws (Guba, 1990). The purpose in defining competency becomes subsumed under goals to diagnose a problem, establish an ideal solution, design a remedy and, then to conduct tests to ascertain boundaries for the remedy (Campbell, 1990; Campbell & Russo, 1999). Thus, when we define competency, we solve a problem.

Rummler and Brache (1995) state that measurement is the only effective means to monitor, manage and improve performance. Barrett and Depinet (1991) argue that psychometric intelligence tests are superior to competency approaches for predicting job success. The psychometric approach offers intellectual antecedents as the causal link to job success. Psychometric tenets or management as science holds that intelligence test scores are the most consistent predictors of performance across a wide range of professional roles. Intelligence tests rely on a variety of abstract kinds of problems that involve difficult vocabulary words, number series and mathematical equations. A key component of psychometric testing is that test items remain secret or unknown to individuals prior to testing.

Sternberg (1997) counters that while psychometric test scores illuminate one part of a professional's intelligence, there are other critical considerations. Herrnstein and Murray (1994) report that, in the United States, intelligence test scores account for approximately ten percent of the variation in individual differences across a wide

range of success domains. Sternberg and Kaufman (1998) also find that psychometric test scores fail to explain ninety percent, or more, of the variation in an individual achieving success in any given role.

Herling (2000) extends the scientific perspective beyond performance prediction to performance improvement. He contends that measurement is the principal tool that connects individual performance improvement to organizational activities. According to Herling, competency is an observable and measurable subset of each individual's area of expertise. Thus, a competency involves "task-specific actions and is therefore found within an individual's domain of expertise, not encircling it" (p. 19). On the other hand, expertise is "the optimum level at which a person is able and expected to perform within a specialized realm of human activity" (p. 9). So, while a competency is "a destination" (p. 19) expertise is "clearly a process journey" (p. 19). Still, like McClelland's (1973) contention that competency is best described in the words and actions of successful individuals, so expertise "allows the actions of exemplary performers within an organization to be benchmarked in qualitative and quantitative terms" (Herling, 2000, p. 19). The key to expertise resides in a person's inclination to achieve goals "through non-routine purposeful activity"—problem solving (Herling, 2000, p. 15). Finally, Herling (2000) opines that training programs constitute the primary means to "accelerate both the acquisition of specific knowledge and skill sets and the transfer of expertise" (p. 19).

The training approach to professional development compartmentalizes skills and knowledge components. There is no proof that mastery of either of these components induces superior performance because professionals integrate a wide range of

expertise, skills and knowledge. Furthermore, emphasis on behavior can degrade the effectiveness of professional development initiatives (Eraut, 1994).

Short (1984) argues against the management as science approach because limiting the notion of competency to specific behaviors or performances "has a very narrow range of usefulness and applicability" (p. 175). Along the same lines, when competency is a function of knowledge or skills the question devolves to how much is enough to declare competence at some level of performance. Thus, the evaluation and measurement conundrum remains a dominant force.

The emergent assumption of the observable, performance-based approaches appears to be that professionals are rational, logical, plan-based, and goal-seeking actors (Farjoun, 2002). Management literature is replete with criticisms and research findings that offer little support to such an assumption (Cacioppo, Petty, Feinstein, & Jarvis, 1996; Das, 1987; Schön, 1987; Shortell & Zajac, 1990; Slocombe, & Bluedorn, 1999). Furthermore, the management as science model proposes that observation, measurement and interventions lead to performance improvement. There is an implicit assumption of system stability (Chia, 1999; Schwartz & Ogilvy, 1979). Information Age executives work in a complex, dynamic system where tidy problems are the exception and untidy messes are commonplace (Farjoun, 2002; Lester, 1995).

Similarly, Judd and Robotham (1997) contend that the psychometric, scientific perspective fails on grounds that there is no proof that intelligence, expertise, competency or performance allow constructs that "are actually amenable to being measured" (p. 2). Garrick (2000) agrees that the scientific management goal to

observe and measure accurately a competency is not feasible. Sternberg (1997) adds that while measurement provides a partial accounting of human activity, the concept of executive or managerial intelligence needs to be expanded. The management as science model needs to be "superseded by a broader, more encompassing model" (p. 476).

Sternberg (1997) reminds that any argument that scientific paradigm interest in observation and measurement has no value is baseless. To the contrary, studies support the contributions of psychometric intelligence tests and other performance based management models. The problem is that research studies also give credence to aspects of intelligence and performance that are beyond precise measurement. In fact, "a multiple-abilities prediction model of school or job performance would probably be most satisfactory" (p. 495). Also, Garrick (2000) stresses the importance of "establishing an appropriate balance between theoretical/disciplinary-based knowledge and the practical know-how desired in the workplace" (p. 254). Sternberg (1996b, 1997) suggests that professional competencies combine management as science issues like memory-analytic qualities with management as art issues like practical and creative abilities.

The following discussion rests on a foundational assumption that organizations function as social systems (Boulding, 1956; Parsons, 1956; Weick, 1984). Social systems are outside the rules-based methods that govern the natural sciences. Therefore, a competency study is more based in a social science methodology where credence accrues to a preponderance of evidence, pattern analysis, and relative

strength of arguments over concrete facts and irrefutable proofs (Lindblom & Cohen, 1979).

Defining Competency in the Information Age Paradigm

Schwartz and Ogilvy (1979) use a different set of concepts in framing the definition discussion. They incorporate art and science in a wider view—perspective. The notion of "perspective borrows from both, defining a personal view from some distance" (p. 53). The Information Age metaphor is a holograph in which information relevant to each part is distributed throughout the whole. Information is not fenced into compartmented sub-sets. The Information Age paradigm brings a plurality of relevant knowledge to any given situation. Thus, the holographic metaphor redefines the "nature of knowledge and the process of knowing" (p. 54) to place knowledge from interpretation on equal standing with knowledge from scientific fact. Accordingly, the entire science versus art debate rests on a false dichotomy.

The Information Age paradigm draws from revolutionary research findings in a wide range of fields that include brain theory, mathematics, biology, philosophy, and psychology. The potential of each human being is broader and more diverse than previously imagined. There is growing support for "the wisdom of the body" that embraces words such as "intuition and creativity" (Schwartz & Ogilvy, 1979, p. 48). Intuition and creativity are sub-conscious cognitive processes that enable "self-expectations, internalized expectations of others, images of the self and limitations of the self, and images of the future, which play a prominent role in enhancing actualization of one's capacities" (Schwartz & Ogilvy, 1979, p. 48).

Lincoln (1985) and Chia (1999) extend the Information Age paradigm concept to frame development as no longer being a sequential progression of additive events. Time does not stand still as we assemble the components of change. The dominant structure shifts from hierarchy to heterarchy. Events associated with development in any context take different ordering scenarios depending on context and across system interactions. Control and predictive qualities have lost standing. Complex systems respond to events unevenly and without predictive qualities. One-to-one causal relationships no longer represent reality. The amount of information and the wide range of plausible responses suggest that mutual causality appears as irregular and non-linear development.

Proponents of the Information Age paradigm assume that reality is cognitive, social, and experiential. The belief system holds that management incorporates a creative or artistic design component—the constructivist approach begins inside a contextual setting. The standard shifts from a demand that the definition is true to a primary concern about the extent to which the constructed definition is congruent with context in which it is used. Defining competency becomes a subjective exercise where values bind a definition within its contextual setting (Gioia & Pitre, 1990). Lincoln (1990) holds that, as knowledge, construct definitions exist in "clumps of understanding" with different definitions taking "different shapes" in forms best described as "amoeba-like irregular circles" (p. 84).

Stoof et al. (2002) cobble together the concept of "terminological hygiene" (p. 357) to emphasize that competency is a construct with its own meaning—a construct that is distinctively different from all related terms such as ability or performance.

While competency is a state of being, ability or set of properties, the word performance entails the "execution of an action, something accomplished" (Mish, 1995, p. 863). In a linguistic study, Chomsky (1965) describes performance as closely related to an observable, objective result while competency refers more to personal abilities that underlie this result. Van der Klink and Boon (2002) recommend a wide-angle view of competencies for professional education. They propose going beyond a focus on required current knowledge, skills and attitudes to incorporate the context and competencies that hold value for future professional development.

Lester (1995) notes that creativity, values, and alternative perspectives serve as a leavening for logic. In order to apply a logical solution, executives now must first "theorize the situation ... to construct the problems which are to be solved" (p. 2). Professionals cannot limit their attention to problem solving only. The Information Age professional "operates reflectively and intelligently in these messy situations ... to design and create desired outcomes" (p. 2). The reality is that constructing the problem and the outcome depend on "perspective or world-view ... they are always somebody's problems and somebody's outcomes.... It is the responsibility of the professional to make informed but ultimately value-based judgments about the decisions ... concerning them" (p. 2).

Spencer and Spencer (1993) support going beyond only observing behavior because "without knowing why a manager is performing a particular activity, you can't know which, if any, competency is demonstrated" (p. 12). Likewise, Lester (1995) critiques the performance approach to competency because problem solving

tends to elevate logic over all other considerations such as values, intent, and culture. The shortfall in the management as science approach is that professionals become more likely to limit attention to outcomes rather than to the "validity of results, with analyzing and solving problems rather than first identifying and constructing them" (p. 1).

Spencer and Spencer (1993) find that dealing with competencies as observable outcomes can be counter productive because "you can miss the strength of competitors by looking only at their end-products, in the same way you miss the strength of the tree if you look only at its leaves" (p. 82). Brown (1993) adds that since professional knowledge is so dynamic, complex and multi-dimensional the discovery of a valid and stable measurement methodology is highly improbable. Lester (1995) contends that management as science misses the "deeper, values-based questions of what outcomes are desirable, how situations are framed as problems (by whom and to whose advantage)" (p. 1). The management as science approach takes the heart out of professional competencies because "what constitutes vital professsional knowledge and competence are assumed to lie beyond the individual practitioner, either with the profession as a body or with some external agency" (p. 1). Lee (2001) agrees that vested participants in an organization provide a more reliable description of professional knowledge and vital competencies.

Definition Summary

If management is a science, then principles of scientific management stipulate techniques based on precise definition, observation and measurement. Science has a

strong appeal because if competencies can be defined, observed, and measured, then the requirement is to devise a process for individuals to acquire and master those competencies. Alternatively, if management is an art then authority shifts to meta-physical qualities of the artist that embrace creativity, imagination, emotion and intuition. In the management as art camp, knowledge is an intellectual process involving the advancement of learning (Brown, 1993; Guba, 1990; Lincoln, 1990).

Thus, given the national security environment and objectives (The National Security Strategy, 2002), competencies cannot be readily defined as always being an observable or measurable construct. Relevant competencies are dynamic constructs that emerge from reciprocal interactions between ends, ways, and means (Chilcoat, 1995). Furthermore, competencies represent cognitive frameworks (Barrie & Pace, 1997); meta-cognitive qualities (Sternberg, 1997); as well as the art and science of applying organizational resources to "sustain coordinated deployments of resources in ways that promise to help an organization achieve its goals" (Sanchez & Heene, 1997a, p. 7). The ideal definition is integral to the contextual setting and allows for the emergence of new competencies that as yet do not exist (Brown, 1993; Stoof et al., 2002). The theoretical (Chia, 1999; Schwartz & Ogilvy, 1979), research (Briscoe and Hall, 1999; Spencer & Spencer, 1993), and professional practitioner (Brown, 1993; Lester, 1995) voices all give credence to the concept that professional practice incorporates a creative, intuitive, and 'unscientific' component.

Based on the patterns of evidence and strength of arguments in the preceding discussion, this study will follow a management as art and science approach. The purpose of the following section is to lay a theoretical base to support a professional

education framework that incorporates strengths from each school of thought. The primary theories are based in cognitive psychology, social learning, and competency-based management. The theory base underpins a subsequent discussion and review of competency models pertaining to professional education and practice.

Theories that Underpin a Competency Framework for Professional Education

Torraco (2000) and Ardichvili (2003) focus on human performance improvement and recommend using theories that employ holistic concepts to integrate learning, performing, and cognitive components. Jarzabkowski (2003) recommends that studies on strategy incorporate theories that focus on "the way that actors interact with social and physical features of context in the everyday activities that constitute practice" (p. 23). Sanchez and Heene (1997b) propose that organizational level strategy theory should meld professional strategists' cognitive abilities for devising new ways of competing with organizational capacities for learning.

This study is based in three theories to develop both a parsimonious and complete professional education framework. First, Sternberg's (1997) theory of triarchic intelligence provides a holistic cognitive concept that integrates precepts of management as science with management as art. Second, activity theory is a practice and learning theory that provides an integrating framework of cognition, behavior, and motivation that is organized "by goals and mechanisms of self-regulation" (Bedny, Seglin, & Meister, 2000). Finally, competency theory incorporates individual strategist mental abilities with organizational processes for building and leveraging

competencies to achieve competitive advantage (Sanchez & Heene, 1997b). The three base theories will be discussed in turn.

Triarchic Intelligence

The notion of intelligence having multiple dimensions is well established in cognitive psychology literature (Anderson, 1975; Gardner, 1983, 1993). Sternberg (1996a) notes that while Gardner frames intelligence along discrete dimensions, the more appropriate view emphasizes "the extent to which they work together" (p. 479). According to triarchic theory, "intelligence comprises three aspects, dealing with the relation of intelligence to (a) the internal world of the person, (b) to experiences, and (c) to the external world" (p. 479). Sternberg's (1997) triarchic theory of human intelligence holds that intelligence has three components: analytical, practical, and creative. All three of these aspects are key to managerial intelligence (Sternberg, 1997).

The analytical component employs competencies to analyze, compare, and evaluate. The analytical component consists of meta-cognition, performance, and knowledge acquisition structures that act in concert within the domain of analytical intelligence. First, individuals use meta-cognition or executive processes to plan, monitor, and evaluate their problem solving. Individuals use meta-cognition in framing a situation that requires a response, developing a response strategy, and focusing knowledge acquisition activities. Meta-cognition supports self-reflection and incorporates past experience into problem solving equations. Second, individuals use performance structures to execute the plans that come from meta-cognition

processes. Finally, individuals use their knowledge-acquisition components to learn how to solve the problems they identify and to adjust their plans to fit the circumstances (Sternberg, 1997).

Sternberg (1997) powers the triarchic theory's second leg, practice, with competencies to acquire and apply common sense or tacit knowledge. Practical intelligence exists in a form that is distinct from intelligence that psychometric tests describe. Practical intelligence refers to "action-oriented knowledge, acquired without direct help from others, that allows individuals to achieve goals they personally value" (p. 483). Tacit knowledge controls standing procedures and success measures in interpersonal and organizational environments.

Creative intelligence, the third and final leg of Sternberg's (1997) triarchic theory entails competencies to view familiar problems in alternative ways. Creative people visualize hidden concepts and find opportunity in anomalies. The creative individual persists in the face of resistance and converts opponents into supporters. The creative individual then moves on to the next new or unpopular idea. A keen sense of timing is an important attribute because novel concepts, ideas and plans can surface prematurely or, if held too long, be overcome by new discoveries. The creative mind is the antithesis of a cognitive miser (Cacioppo, Petty et al., 1996) and the mirror image of the individual Kuhn (1996) describes as establishing new rules of methods and standards of success. In regards to a master strategist, creative intelligence underpins the second level of professional development (Metz, 1991).

In summary, successful leaders adopt a variety of approaches to their work and adapt their thinking to fit the occasion. They understand there is no single formula

for any given situation. The connecting thread is an ongoing process of reflection and learning to grasp the extent of their individual strengths as well as an understanding of personal areas of limited abilities. They integrate their strengths with the strengths of others to shore up areas of individual weaknesses across an organization (Sternberg, 1997). The triarchic theory of intelligence provides an individual level perspective for the integration of learning, performing and cognition with an orientation to performance improvement. The next foundation theory deals with the way individuals interact with the social and physical elements that constitute the context of daily activities in their professional world.

Activity Theory

Bedny et al. (2000) trace the roots of activity theory back to Vygotsky (1978) and Leont'ev (1978). Activity theory rests on a foundation assumption that human psychology is defined by goal directed activities. Activity is defined as a construct that connects "internal mental activity and consciousness of abstractions from a concrete situation that anticipates sequences of other situations, provides insight into one's own and others' mental processes guiding conscious, volitional behavior" (Bedny et al., 2000, p. 169). Activity theory describes human activity as an integrated system of cognitive, motivational and practice components. Goal-directed behavior activates the cognitive, motivational, and practice system components. In regards to learning, activity theory stipulates a competency can be learned. The unique strength that activity theory offers is the "simultaneous formulation of external

behavior in terms of inner mental concepts and dynamics" (Bedny et al., 2000, p. 168).

Engström (2000) describes activity theory as an analysis framework that goes beyond dichotomies of "micro- and macro-, mental and material, observation and intervention" (p. 960). Activity theory draws a bright line between bounded problem-solving and continuous intent based activity. The primary level of analysis looks to the organization as an evolving, historically framed and collective system involved in ongoing interactions with other activity systems. An activity system's center of gravity is a "deeply communal motive ... embedded in the object of the activity" (p. 964) that exceeds the interpretative abilities of any single actor. According to activity theory, internal system contradictions constitute potential for strategic structural transformation. Structural transformation emerges from individual and organizational learning that begins with questions concerning the usefulness of current practices and then can "proceed to actions of analyzing its contradictions and modeling a vision for its zone of proximal development, then to actions of examining and implementing the new model in practice" (p. 960). The zone of proximal development is the space between the current level of performance and a higher performance level achieved through collaboration or coaching. Individual, team, and organizational learning in zones of proximal development constitute the notion of expansive learning that requires across-boundary exchanges and "hybridizing different perspectives and conceptualizations" (p. 960).

Jarzabkowski (2003) reports that activity theory provides a robust framework to examine interactions between actors, organizational structures, and practice.

Jarzabkowski (2003) frames large organizations as activity systems and the top management team as primary actors. In the study, strategic practice is defined as the "interaction between the different parts of the organization in constructing shared strategic activity" (p. 50). Strategic activity is "a form of shared endeavor" (p. 25) that "arises from the interactions of ... actors over time" (p. 26). Strategic activity assumes important influence over strategic practice "to the extent that it also becomes an important constituent of the activity system" (p. 26).

Jarzabkowski's (2003) research findings reinforce the activity theory premise that cognitive development is a process of "social interaction within particular historical and cultural contexts" (p. 24). Likewise, findings support the activity theory proposition that continuity "is constructed through alignment of actors, collective structures and activity coordinated through strategic practices" (p. 48). In keeping with the notion of continuous intent, this study shows that strategic activity mediates contradictions between past and future practice. When facing contradictions, interactions between activity system components lead to new strategic activities or modify and reinterpret existing strategic activities. The study findings indicate change and continuity exist within the same space because rather than solving contradictions through interventions under a scientific paradigm or techno-rational approach, strategic activities "need to accommodate and mediate between constituents in order to promote more collective capacity for change" (p. 50).

Jarzabowski (2003) presents activity theory as an organizing framework that requires consideration of both the individual strategist and the structural context that comprise ongoing activity. The focus is to "strategy as practical activity" in order to

"understand both the continuous performance of strategic work and its evolving nature as patterns of activity are reinterpreted" (p. 51). The next step is to incorporate individual cognitive processes, internal structure and external stimuli as a joint construct that drives strategist activities. Competency theory is the final building block in the theory foundation to describe how strategists integrate individual cognitive powers, internal structures and external stimuli to achieve competitive advantage—the ultimate collective motive for national security master strategists.

Competency Theory

Prevailing strategy theory and research look to external operating environment variables (Porter, 1991), unique resources within a particular organization (Barney, 1991), or the alignment of available resources to internal structure (Chandler, 1962). While popular in guiding both organizational strategy studies and professional education programs, researchers have been unable to define the true drivers of competitive advantage (Zhang & Lado, 2001). Alternatively, competency theory proposes that competitive advantage derives from melding professional strategists' cognitive abilities for devising new ways of competing with organizational capacities for learning. Competency theory calls for a management team with abilities to achieve organizational goals through a sustained and integrated deployment of resources and competencies (Sanchez & Heene, 1997b).

According to Sanchez and Heene (1997b), competency theory is explicitly dynamic, systemic, cognitive and holistic to reflect the actual environment that strategists face. Competency based management theory rests on a reality of an

operating environment that is in flux. The first building block of competency theory is that causal elements of change are interrelated in a complex web that defies accurate prediction. At any point in time critical indicators will point to a complex mix of threats and opportunities. Potential dangers and probable opportunities resemble a patterned array more than a predictable structure.

The second building block is that social organizations are purposeful, goal seeking open systems. In order to maintain purposeful activities, social organizations are open systems in that they employ both internal resources as well as draw on resources outside the organization—resources that are controllable as well as resources that are only available through competitive advantage. Social organizations compete with other entities to acquire and use resources. Thus, social organizations are part of a larger system of economic, technological, educational, legal, and governmental components (Morecroft, Sanchez, & Heene, 2002).

The third competency theory building block is to take a holistic view of organizational development, purposeful activities, and operational processes. Organizations face pulls from a wide variety of contending interests that include stakeholders, resource providers, and clients. Competency theory holds that executives must operate in ways that create value through interactions with all constituent groups. At the same time executives must also allocate the organization's value added dividends to ensure the uninterrupted inflow of critical resources (Morecroft et al., 2002).

The final competency theory building block spotlights the cognitive challenges executives face in managing a complex operating environment, mediating contending demands for resources, and coordinating purposeful activities in ways that ensure

competitive advantage. Competency theory rests on the contention that competition is "a contest between managerial cognitions in which managers compete to imagine, develop, and leverage the organizational competencies" (Sanchez & Heene, 1997b, p. 307). Competency theory "endogenizes asset structures—i.e., industry structures are not taken as a given, but are seen as the consequences ... of a stream of ideas about new ways firms compete more advantageously through creating and deploying assets" (Sanchez & Heene, 1997b, p. 313). Competency theory proposes that organizational knowledge constitutes a capstone strategic asset. Executive cognitive competencies for "sense-making, analyzing, imagining, designing, and other challenging intellectual activities are regarded as fundamental" (Morecroft et al., 2002, p. 6). Competency theory requires executives to manage their own cognitive activities as well as the collective organizational mind.

Competency theory moves away from an objective of identifying some core competencies as a focal point for strategic management. Rather, competency theory holds that bounding attention to a given list of competencies increases the likelihood that executives will miss the larger view of the organization as a system of interdependent resources and capabilities. Competency theory holds that core competencies exist as an extended set of interdependent capabilities and resources that must be managed as a system (Sanchez & Heene, 1997b).

Underpinning Theories Summary

The underpinning theories frame the notion of competency as the art and science of achieving and sustaining competitive advantage. In concert the three foundation

theories present a consistent pattern of propositions that integrate components of logic from the management as science argument, creativity from the management as art perspective, and add situated practice. Importantly, the theories support Metz's (1991) finding that strategists require unique competencies for cognitive mastery, transcendent thinking, and professional standing to sway internal and external stakeholders. Likewise, the three theories mirror the roles Chilcoat (1995) ascribes to a master strategist as strategic leader, theoretician, and practitioner. The purpose of the following section is to show how competency definitions and underpinning theories inform our choice of competency models.

Competency Models

Theorists and practitioners often build a bridge to connect ideas imbedded in theory with observable reality; these bridges are models that act like a linguistic metaphor (Ornstein & Hunkins, 1993). Mirabile (1997) describes a competency model as the characteristics that distinguish high performers. The model format depends on analysis methodology, client needs, and model builder preferences. In order to be useful, a competency model must have an integrated data collection, analysis, and implementation plan. The first issue in building a competency model is to define "what you want to do as a result of building the model" (p. 76). A general competency model rule holds that greater detail requires more time, increases the cost, and increases contextual congruence.

Rodriguez et al. (2002) note that robust competency models have direct connections to organizational goals and strategies. Lester (1995) agrees that competency

models should demonstrate a primary concern with “practice directly rather than with practice as an application of knowledge, and secondly from their use of practice situations to derive objectives for development” (p. 4). Short (1984) highlights the importance that competency models integrate a wide range of conceptual relationships. Furthermore, a competency model should be more than a listing of specific behaviors and expand to describe attributes rather than actions.

The development of a model that connects competencies to education or organizational activities tends to emerge from the characteristics of three generic architectural designs. These three architectural frameworks will be discussed in the following sections. The specific strengths and shortfalls of each type will be highlighted. Following a discussion of generic types, specific competency models drawn from literature will be presented. The final portion of this section is a summary of strengths and weaknesses of competency models.

Generic Architectural Types

The occupational standards model draws attention to performance. Competency is a function of looking at outcomes in a particular job role. The occupational standards model brings together precise terminology and performance indicators that can become a calibrated measurement tool. Competencies emerge from a top-down analysis of position descriptions, discrete tasks, and quality standards. Knowledge plays a supporting role while task performance plays a major role. Interest in performance tends to shift executive attention away from individual personality and cognitive strengths that underpin human activity (Cheetham & Chivers, 1996).

Second, the job competence model is a more interactive approach that combines tasks, task management, and the work setting. The task component incorporates a range of skills that are necessary to fulfill the job role. Task management addresses the integration of all the skills that are necessary to complete multiple simultaneous tasks that must be performed in sequence or to develop responses as problems arise. The job setting component addresses the specific operating environment and can include considerations such as job purpose, technology, organization structure and culture. In comparison to the full range of competencies that make up an executive or managerial role, the job competence model provides a narrow range of competencies as skills. Also, there is no explicit allowance for variance in cognitive processing, professional ethics, or values. The job competence model makes an important allowance for contextual setting. Still, the job setting component fails to specify the critical historical, relational, and environmental considerations inherent to a full consideration of a job setting (Cheetham & Chivers, 1996).

The personal competency model builds from McClelland's (1973) work. The personal competency model is prevalent in the United States as a research and management strategy. While the occupational standards and job competence models highlight performance in a current position, the personal competency model has a somewhat more futuristic orientation. The assumption is that personal competency will allow more accurate predictions of potential for promotion. For example, Boyatzis (1982) proposes a range of behavioral intangibles that include interpersonal and team building skills as necessary for managers in various organizational types. The difficulty is that having the optimal range of competencies provides no certainty

that the individual will bring competencies together in a coordinated and effective manner. Structural flaws in the personal competency model include too little attention to what constitutes effective performance as well as to marginalizing considerations of knowledge, values and ethics (Cheetham & Chivers, 1996).

The three generic architectural models lend support to the concept of constructing a competency framework. The inherent strengths and weaknesses in the generic models point to their value as sources of building materials rather than as stand-alone structures. The following section will show how the components of the generic models have been assembled in two contrasting competency models of practice.

Management Competency Model

McClelland (1973), Spencer and Spencer (1993), and Rodriguez et al. (2002) are representatives of the management competency model. The foundation assumption holds that traditional academic aptitude and knowledge content tests, as well as school grades and credentials: (1) do not predict job performance or success in life; (2) are often biased against minorities, women, and persons from lower socio-economic strata (McClelland, 1973). The management competency model focuses on recruiting, selecting, employing, assessing, training, and developing employees.

According to Spencer and Spencer (1993), a competency is a stable construct that allows accurate behavioral projections in a wide variety of situations and job tasks. The competency construct incorporates motives to provide indicators of what an individual will do when alone. Competencies also incorporate the concept of values that can predict immediate responses and behavior when others are in charge. Mental

or cognitive competencies include analytic thinking—processing knowledge and data, determining cause and effect, organizing data and plans as well as conceptual thinking—recognizing patterns in complex data.

McClelland (1998) recommends the behavioral event interview to uncover behavioral and cognitive competencies. The competency identification process begins with a panel of experts nominating average and outstanding performers. The underlying assumption is that people have less difficulty with deciding who is competent than what makes them competent. The goal is to highlight differences between average and high performing individuals. The behavioral event interview process opens with the respondent briefly describing three major successes and three major failures. The interviewer then probes the stories to discover circumstances surrounding the situation, actors and roles, the individual's feelings and objectives, decisions on a course of action, and, finally, the end result. Thematic analysis serves to identify characteristics that distinguish highly successful from average performers.

Alternatively, the U.S. Government Office of Personnel Management uses a three-step management competency approach. The first step involves a review of literature to identify a draft list of current and future competencies for a particular career field. Subject matter experts review the draft list to ensure consistency of language and to group competencies around specific job requirements. The second step calls for job incumbents and supervisors to evaluate each competency on scales of overall importance, entry level requirements, need for training, and frequency of use. The final step involves the development of benchmarks, or mastery levels, for competencies. An individual may be evaluated by comparing his/her mastery of a

competency to the benchmark levels. After finalizing the benchmarks, human resource professionals develop questions to elicit behavioral responses that can be tied back to the benchmarks for rating purposes. Benchmarking represents an application of the behavioral consistency approach, where past behavior is a good indication of future behavior (Rodriguez et al., 2002).

Judd and Robotham (1997) observe that the behavioral perspective directs attention to lists that capture optimal behavioral outcomes. The behavioral competency perspective rests on three implicit assumptions. The first is that individuals achieve success by mimicking the list of behaviors. The second is that the list of behaviors brings success irrespective of the contextual setting. The final assumption is that it is possible to reduce executive and manager roles to constituent elements. The behavioral or outcome approach suggests equality across the list of activities for a successful executive or manager. In choosing activities from a competency list, executives face two major risks. The first is that lists suggest a "flat-line" evaluation guide—being ineffective in one item drives a perception of being ineffective overall. The second risk is that in following a generic competency list the executive falls victim to mimetic isomorphism. A behavioral approach cannot capture the reality that executives and managers tend to "display certain characteristics unique to them and their management style" (p. 4).

Briscoe and Hall (1999) report that 38% of the organizations in their study follow the methodologically driven management model. The key advantage to having a research-based foundation for competencies is that the resulting competencies can be statistically associated with superior performance in a given setting. The

methodological rigor lends a sense of legitimacy to the process and to the outcome. Also, the interview process gives participants and executives a sense of ownership of the process. The competency databases can serve as useful guides for employee selection and development. On the other hand, there are concerns and drawbacks to the research approach. The central issue concerns the level of confidence in the accuracy and completeness of competency lists—the doubt that a critical competency remains obscure. In this line of thought, while executive development professionals support the notion that research-based competencies predict success, the counter balance is that these competencies are difficult to capture. Finally, a management research based competency model is resource intensive in terms of time, funding, and personnel.

The following section is a description of an alternative model that highlights integration of values, ethics, strategy, meta-competencies, and professional education. The holistic model looks to circumstances of uncertainty when critical competencies may or may not be in place.

Holistic Competency Model

The holistic competency model has a philosophical base in Schwartz and Ogilvy's (1979) paradigm for the Information Age. The holistic competency model assumes that all the implications of the Information Age (Toffler, 1980) and that new ways of knowing (Schwartz & Ogilvy, 1979) are not yet fully apparent. The Information Age professional practitioner will be less a member of a definable occupation than a

capable, learning individual with an evolving portfolio of experience and ability (Cheetham & Chivers, 1996; Lester, 1995).

Lester (1995) notes that the holistic model embraces a constructivist outlook in viewing "methods and outcomes as interdependent and an interacting cycle of problem-setting and solving" (p. 2). Furthermore, he describes knowledge "existing in a cyclic or spiral relationship with practice in which it arises from doing and informs further action which in turn generates new knowledge" (Lester, 1995, p. 2). Thus, knowledge development becomes a strategic activity (Jazrabkowski, 2003) or continuous intent (Engström, 2000).

Lester (1995) holds that the holistic model subsumes the management as science or techno-rational approach. A holistic model gives practitioners choices and requires decisions concerning outcomes as well as methods. Practitioners decide "which knowledge to use as well as how to use it" (p. 2). The holistic model brings a broader perspective about what professionals in any given field must be able to accomplish. Success under the holistic model incorporates a new range of competencies that enable individuals to "create and define their own task and become involved in world-making" (p. 4) as well as to "develop the abilities they need to operate in these tasks and worlds of their own construction" (p. 4).

Professionals operating in a holistic model concept must discover new knowledge, theories, and practices. The holistic model also introduces the need for individuals to engage in critical reflection "through an ongoing self-critical dialog and through stepping back from and reframing practice in order to question it in light of experience, knowledge and theory" (Lester, 1995, p. 5).

In keeping with the base theories, the holistic model recognizes learning and performing as equal components of one construct. While the management competency model is generally concerned with the answers to questions posed by predictable tasks in known worlds, the holistic model leads to practitioners with inclinations "to ask the right questions, construct problems from problematic situations, and develop the means to resolve them" (Lester, 1995, p. 4). Professional practice embeds ideas, knowledge, time, and resources in a holograph-like framework where information about each part is distributed throughout the whole (Cheetham & Chivers, 1996; Lester, 1995).

Cheetham and Chivers (1996) describe a professional competency model appropriate in situations that are by nature dynamic and complex; where necessary knowledge and skills involve multi-discipline approaches; and, outcomes emerge more from influence than from control. The professional competency model integrates outcome principles from the three generic models with Schön's (1987) principles for reflective practitioners.

Cheetham and Chivers (1996) describe the professional competency model as a system with four interrelated competency components. In the first component, functional competencies address having requisite skills and being able to coordinate skills in a coordinated performance. Functional competencies are unique to a given professional domain. Functional competencies include capabilities to exercise organizational processes such as planning, decision-making, and quality management. Functional competencies also incorporate individual cognitive processes that enable communication, analysis, and other mental activities. The final consideration in

functional competencies addresses psychomotor or physical abilities such as endurance, stamina, and dexterity.

In the second component, cognitive competencies involve having and applying knowledge. On one level knowledge is tacit, embedded within professional practice following Schön's (1987) concept of knowing-in-action. Technical or theoretical knowledge is another facet to cognitive competencies. Theoretical knowledge combines understanding the theories that underpin a professional practice domain with abilities for applying, synthesizing, and extrapolating theoretical principles to discrete situations. A third facet of cognitive competencies involves procedural knowledge of how to get things done, what needs to be done, who should be involved, and when a situation is ready for consideration. The final facet of cognitive competencies refers to knowledge about the contextual setting that defines a given professional domain (Cheetham & Chivers, 1996). Contextual setting incorporates activity theory concepts of reciprocal relationships between actors, collective structures, and strategic activity (Jarzabowski, 2003).

The third component concerns behavioral competencies. On one level, behavioral competencies address personal abilities to operate in a social setting. The points of interest include the sense of self-confidence, abilities to respond while under pressure, inclinations to monitor and control expressive behaviors, listening to what others say, and focus to remain on task. The complementary behavioral level competencies involve abilities to engage in intra-professional exchanges. The points of interest include participating in teams, showing awareness of peers, and conforming to professional practice norms (Cheetham & Chivers, 1996).

The fourth component draws in values or ethical competencies. On a personal level, values and ethical competencies embrace concepts of law, moral codes, religious beliefs, and adherence to a personal moral code. The complementary professional level values and ethical competencies address professional codes of practice, self-control, client-centeredness, and ethical decision-making (Cheetham & Chivers, 1996).

Competency Models Summary

The description of the management and holistic competency models gives a contrast of two belief systems concerning professional education and practice. The management model highlights methodological rigor, provides consistent language between career field competencies, and stipulates that past behavior will accurately predict future behavior. While very popular, the management model can be an expensive and time-consuming activity, sometimes taking as much as four years to establish or revise (Briscoe & Hall, 1999). The management model tends to rely on training as the primary vehicle to develop individual skills. The management model instills a sense of continuity and stability in the competencies that enable successful outcomes. In contrast, the holistic competency model describes learning and performing as interrelated parts of a whole. Whereas the management model seeks to answer questions, the holistic competency model shows more interest in asking the best question, constructing problems that accurately reflect a setting, and designing ways to resolve those problems. Whereas the management model involves mastery of a competency list, the holistic model relies on professional education as an ongoing

process. The holistic model also introduces the need for individuals to create new knowledge through critical reflection that continually questions practice in light of experience, knowledge, and theory.

Competencies provide a necessary but not all sufficient means to achieve competitive advantage in an Information Age environment. The holistic model brings the need for creating competencies where none exist. The next section is a discussion of professional education and the special set of competencies that power professional education as a strategic activity.

The Professional Education Framework

The competency movement traces its roots back to the issue of how best to predict future performance—psychometric intelligence tests (Barrett & Depinet, 1991) or dynamic competency tests (McClelland, 1973). Briscoe and Hall (1999) note that organizational theory and research findings now point toward personal learning and the capacity to learn as more important concerns in identifying individuals with the highest potential for future success. The implication is that professional practitioners and scholars need to develop meta-competencies that "will help them develop the just-in-time competencies they will need in order to adapt to ongoing, short-term challenges, and the personal competencies that will help them endure and lead through multiple waves of change" (p. 50). Professional military education for theoretical/master strategists sets the same life-long, continual learning objective (CJCSI 1800.01A, 2000; *Report on Military Education*, 1989).

In describing reflective thinking, Dewey (1933) offers prescient insight into professional practice within parameters of the Information Age paradigm. Reflective thinking is more than a wandering mind in pursuit of pleasant thoughts. Reflective thinking brings cognitive focus to the implications of an idea and looks forward to performance outcomes. Norton (1994) carries Dewey's beliefs forward in stating that reflective thinkers are both proactive and involved actors. They use logic-driven, methodologically sound inquiry in developing strategies for managing personal and professional situations.

Schön (1983, 1987) holds that in all fields of endeavor, professional practitioners cannot rely on a static body of knowledge as the basis for developing responses to complex situations. Quite the opposite, professional practitioners must frame each problem within a current context in relation to the desired outcomes and within the available means. Professional proficiency involves developing a personal theory to explain and guide the application of available means to achieve a particular objective. The reflective practitioner argument holds that professional practice relies more on tacit knowledge than hard facts; more on reflection than method driven research; and, more on contextual responses than on wide generalizations. Professional practice improves through the acquisition of tacit knowledge, knowing-in-action, and the abilities to learn through and within a professional setting—reflection-on-action. Reflection across operational, moral, and ethical dimensions, during periods of uncertainty, is the quality that distinguishes professional practitioners from technicians. Importantly, reflection-in-action occurs within a temporal boundary that is a function of when action can have effect on achieving the desired objectives. Thus, in

concert with triarchic theory, activity theory and competency theory, cognitive reflection depends on both physical and intangible resources and occurs within contextual boundaries of the practice domain.

Hall (1986) coins the term “meta-skills” to describe skills that exist as higher order skills necessary to ongoing professional development. In the same line of thought, Reynolds and Snell (1988) (as cited in Cheetham & Chivers, 1996) refer to meta-qualities such as creativity, mental agility, and learning skills. Meta-qualities underpin and reinforce all other qualities of successful practice.

Brown and McCartney (1995) define meta-competencies as the “higher order skills and abilities upon which competencies are based and which have to do with being able to learn, adapt, anticipate, and create rather than being able to demonstrate that one has the ability to do” (p. 47). They liken meta-competencies with abilities to develop a proposal, collect data, make a logical argument, apply knowledge, and communicate ideas. Meta-competencies are “those abilities, skills, and capacities which exist above and beyond any competency which an individual may develop, guiding and sustaining them, and from which they originate” (p. 48). Individual capacities that appear as sound judgment, intuitive thinking, and expertise have a reciprocal relationship that exceeds the notion of competency—these baseline executive qualities are meta-competencies.

Meyer and Semark (1996) suggest four meta-competency clusters. The first cluster involves managing cognitive complexity along the lines Boulding (1956) describes in general systems theory. Cognitive complexity exists in a continuum that runs from static structures, through open system self-maintaining structures, to the

level of overarching transcendental systems. The second cluster involves facilitating multiple levels of communication such as intra-team relations, inter-team exchanges across functional boundaries, and exchanges with stakeholders in the external environment. The third meta-competency cluster concerns abilities to generate new ideas and sell new approaches before the need is widely visible. The final cluster addresses openness to diversity in the form of "new knowledge, concepts, values, and behavioral norms, both at a cognitive and affective level" (p. 7).

Cheetham and Chivers (1998) use feedback from eighty interviews that cut across twenty professional domains to construct a capstone competency framework component that involves overarching, cognitive processes. Meta-, trans-, and super-competencies constitute executive cognitive activities (Sternberg, 1997) that exist on three interrelated levels. Meta-competencies have a narrow role to enable competency development activities. The enabler role helps individuals analyze and develop existing competencies. Trans-competencies are more than development enablers and assume qualities that enhance existing competencies such as communication or mental agility.

Cheetham and Chivers (1998) cluster meta- and trans-competencies around concepts of communication, creativity, problem-solving strategies, learning styles, and mental agility. Occupying a higher level, super-competencies represent the cognitive power a professional practitioner needs to maneuver beyond existing competencies—to analyze, modify, and create competencies. Super-competencies rest on Schön's (1983, 1987) notion of the reflective practitioner. As a super competency, reflection has the role of "gatekeeper to certain kinds of development" (Cheetham & Chivers,

1998, p. 274). There are ample descriptions of reflection activities (Cheetham & Chivers, 1998; Dewey, 1933; Lester, 1995; Schön, 1987). The question becomes, what are the meta- and trans-competencies that reside within the super competency of reflection?

Scholtes (1999) takes from theory of profound knowledge (Deming, 1994) a set of six meta or trans-competencies that power the reflection super competency. The first deals with systems thinking. Thinking at a system level involves context "to show the larger purpose and meaning of something" (p. 705). Thinking in systems involves an appreciation that systems consist of multiple components that must be oriented to a common goal. The second meta-competency describes the importance of understanding variation. Understanding variation is an inoculation to protect against "simplistic—almost superstitious—explanations about past events" and brings an "understanding about what to expect in the future" (p. 705). Systems thinking and understanding variation require rich data sets and the cognitive qualities Sternberg (1997) describes in triarchic theory.

In the third meta-competency, Scholtes (1999) deals with continual learning as the interaction between formal theoretical knowledge and practice. The interaction follows a cyclical pattern that establishes learning as a strategic activity. In order to lead learning, executives require a fourth meta-competency that involves understanding human behavior. The meta-competency involves application of what we know about motivation, teamwork, loyalty, and performance. Understanding human behavior brings executives to establish a sense of organizational community and "genuine relationships between managers and employees" (p. 706) that first attends to the

needs of people over organizational performance. The interactions between motivation and learning induce a "self perpetuating cycle of mutual trust and respect" (p. 707) that, ultimately, provides competitive advantage. In this context, the base theories support continual learning and understanding human behavior as complementary elements of one construct—strategic activity (Jarzabkowski, 2003; Sanchez & Heene, 1997b).

Scholtes (1999) describes the fifth meta-competency as "understanding and influencing the interactions and interdependencies among and between the system, variability, learning and human behavior" (p. 707). In a reciprocal relationship, each of the four elements attains power that exceeds its individual contribution. The fifth meta-competency enables executives to understand, implement, and manage complex change. The sixth meta-competency is complementary to enable executives to give their organization a commonly agreed direction and focus. The final meta-competency circles back to systems level thinking to highlight the proposition that "everything starts with a purpose" and "everything revolves around a purpose" (p. 708). The idea here is to keep the purpose at the forefront of people's minds—to instill a sense of community toward achieving a common goal. Competency theory (Sanchez & Heene, 1997b) explains the working together of interaction among system components and organizational focus. Furthermore, activity theory describes the same phenomena as strategic activity (Jarzrabkowski, 2003).

In summary, Briscoe and Hall (1999) use feedback from executives across 31 companies with professional development programs to support the concept of meta-competencies. They conclude that no organization has individuals with abilities to

anticipate all future competency requirements. On average, development or revision of competency frameworks requires an average of over four years. Meta-competencies provide the capability to maintain a competency framework that is consistent with the operating environment. The following section is an outline of a professional education framework that supports the needs of an organization seeking to achieve and maintain competitive advantage.

Professional Education for Master Strategists

The purpose of this discussion is to outline a professional education framework that incorporates four competency domains of professional practice along with concepts of meta-competencies (Cheetham & Chivers, 1996, 1998, 2000). The professional education framework synthesizes principles from the theory base. First, triarchic theory describes intelligence in terms of cognitive and meta-cognitive processes that support managerial success. Analytical or logic based cognitive competencies enable individuals to compare, plan, monitor and evaluate. Practical intelligence enables the acquisition and use of tacit knowledge. Creative intelligence enables the executive to find success in obscure opportunities and to reform or redefine the rules of success (Sternberg, 1997). Activity theory proposes that psychological reality evolves from socially organized activities and that social interactions stimulate critical thinking. Practice and learning occur within a particular historical, cultural, and technological context (Ratner, 1999). Finally, competency theory proposes that competition is an ongoing cognitive contest in which executives must apply the tenets of triarchic intelligence within a given historical, cultural, and

technological setting (Sanchez & Heene, 1997b). The professional education framework envisions master strategists fulfilling simultaneously three roles of strategic leader, theoretician, and practitioner (Chilcoat, 1995). The professional education system aim is to produce master strategists with the super competency and associated meta-competencies to provide intellectual leadership to applied strategists (Cheetham & Chivers, 1998; CJCSI 1800.01A, 2000; *Report on Military Education*, 1989; Scholtes, 1999).

While training is a critical ingredient to professional development, training to perform a particular skill or set of skills is not synonymous with professional education. Training provides instruction in a particular skill and draws attention to a distinct set of outcomes. Training plans orient on performance across a continuum that runs from simple individual training to highly complex exercises that integrate all organizational components on a series of objectives. In contrast, professional education attends to intangible constructs such as wisdom, judgment, and creativity (Simons, 2000).

Kenney (1996) and Lester (1995) suggest that professional education programs must turn away from the traditional approaches that follow a training model. Rather, professional education programs for mature practitioners should develop meta-cognitive abilities or meta-competencies that enable life-long, just-in-time learning.

Lei et al. (1996) support the contention that traditional approaches to professional development need to move beyond what Schön (1987) describes as a techno-rational approach and come to integrate the notion of organizational meta-learning. Organizational meta-learning involves abilities both to define unique problems and

then to introduce specific problem-solving insights in the same ways that Cheetham and Chivers (1998) describe the contribution of super-, trans- and meta-competencies. Van der Vorst (1997) adds that competency identification and reflection are the means to "reduce possibilities and create options at the same time" (p. 251). Professional education programs need to help individuals enhance their competencies and expand their knowledge especially as competency and knowledge become "potentially transient and subject to modification and reconstruction according to changing circumstances and situational demands (Lester, 1995, p. 8).

Lester (1995) uses Information Age paradigm (Schwartz & Ogilvy, 1979) principles to collapse longstanding dichotomies between academic institutions and organizational practice. First, life-long and organizational learning make professional education an ongoing process, and, concurrently remove distinctions between working and learning. Second, lifelong-learning provides the foundation for "effective practice and academic rigor by integrating critical, academically rigorous thinking with everyday practice" (Lester, 1995, p. 8). A professional education framework enables scholarly activities to inform and learn from practice without sacrificing academic rigor. Likewise, professional practice moves beyond a single-minded focus on operational matters to embrace theory, learning, and creativity. The longstanding dichotomies such as research and practice, learning and performing as well as knowledge and competencies become holistic strategic activities (Jarzabkowski, 2003).

Cheetham and Chivers (2000) echo the call for a "modified epistemology of professional practice—technically grounded extemporization" (p. 383) that develops professional knowledge, functional competencies, rational and reflective thinking,

and innovative practice. Schön (1995) agrees and describes professional education as a community of practice. Professional education should take on a new form that synthesizes and applies knowledge that emerges from the community according to community norms. Scholarship mirrors professional practice and integrates theoretical and tacit knowledge. There must be room for reflection as a means to generate useful knowledge in the form of new theory, models, and simulations.

Cheetham and Chivers (2000) use feedback from over 400 practitioners in 26 professional fields to assess the validity of the reflective practitioner theory. Professional practitioners draw from both specialized, formal knowledge as well as from tacit knowledge and reflection. Over 85% of the practitioners claim to combine formal, theoretical knowledge with common sense, peer consultation, intuition, and elements of past successes. Practitioners are reflective with over 79% of the participants claiming to reflect consistently on their professional work. More importantly, among those who consistently engage in reflection, 96% claim to modify their behavior based on reflection. The feedback supports a finding that much professional reflection lacks a systemic framework of reflective journals, after action reviews, and peer reviews. Also, reflection is more important to mature professional practice than to the formative stages. Professional practice rests on declarative and theoretical knowledge. In unique or unprecedented problem solving situations, professionals first draw from their theoretical knowledge base. Equally important, professionals "need to be able to improvise and think on their feet" (p. 382). Tacit knowledge appears to enable professionals to be intuitive, "to act at a level of unconscious competence" (p. 382).

Professional Education Summary

An international operating environment that is in flux (Lei et al., 1996; Murray, 2001; Sanchez & Heene, 1997b; Toffler, 1980) brings professional education to a crossroads (Lester, 1995). Kenney (1996) and Lester (1995) agree with Toffler's (1980) assessment and observe that professional education must shift away from preparing individuals for particular roles—like analytical strategists operating within the context of a plan. Instead, Information Age professional education needs to prepare individuals with theoretical strategist intellectual abilities for creative thinking, analytic reasoning, and good decision-making (Kenney, 1996; *Report on Military Education*, 1989). Professional military education for master strategists operates under an additional degree of difficulty. Throughout history, master strategists as practitioners typically spend much of their professional life in a reality that is diametrically opposed to their professional calling. In the current operating environment distinctions between peacetime and wartime are less distinctive (The National Security Strategy, 2002). Therefore, professional education needs to connect seamlessly these two realities—peacetime and wartime (Murray, 2001).

A professional education setting that develops existing competencies gives a solid foundation. The problem is that the foundation principle is flawed in the current operating environment. High quality foundations have the capacity to be resistant to ground shift. Foundations tend to lack flexibility and when the ground makes dramatic movement—foundations are prone to failure that brings down the entire structure. Likewise, competencies tend to be static and resistant to effects of a dynamic environment (Spencer & Spencer, 1993). Information Age master strategists must, on

occasion, cast off current knowledge in order to facilitate new learning (Garrick, 2000; Metz, 1991). Professional education requires a cognitive, executive management component that enables the development of competency where no competency exists (Cheetham & Chivers, 2000; Chilcoat, 1999; Lester, 1995; Metz, 1991).

Summary of the Review of Literature

The pattern of evidence and strength of arguments in the review of literature suggest that our professional education program for master strategists may not be fully adequate for the times. National security objectives in the twenty-first century look beyond global stability toward a vision of making the world better. The call to transform U.S. security institutions to twenty-first century needs (The National Security Strategy, 2002) reverberates throughout discussions of professional military education (Chilcoat, 1999; Galvin, 1995; Kupchan, 2002; Metz, 1991). Master strategists in all competitive organizations require a multi-dimensional cognitive framework to be simultaneously strategic leaders, theoreticians, and leaders (Chilcoat, 1995). The base theories (Engeström, 2000; Sanchez & Heene, 1997b; Sternberg, 1997) as well as research findings support the notion that a professional education framework for master strategists must move to incorporate a wide range of competencies. Cheetham and Chivers (1998) report primary domains to be cognitive, functional, behavioral, and values or ethical competencies. Scholtes (1999) describes a professional education competency framework under Deming's (1994) concept of profound knowledge. Scholtes (1999) moves beyond competencies as skills to meta-competencies. The competency framework describes domains of knowledge such as

systems level thinking, understanding variation, continual learning, understanding human behavior, influencing the interaction of system components, and instilling a sense of purposeful activity in organizations. Master strategists are senior professionals operating at exceptionally high levels in organizations (CJCSI 1800.01A, 2000). As senior members of the national security apparatus, professional education for master strategists must also lead to super as well as meta- and trans-competencies (Cheetham & Chivers, 1998; Chilcoat, 1999; Lester, 1995; Scholtes, 1999). Briscoe and Hall (1999) provide research findings that support the call for master strategists to be continual learners and for professional military education to be ever evolving to higher levels of effectiveness (CJCSI 1800.01A, 2000).

The review of literature provides a link from the problem concerning the need for a competency framework to guide professional education of theoretical or master strategists with the research methodology. The following chapter is a description of the research approach to identify the most important competencies that master strategists will need in the coming decades.

CHAPTER III

METHODOLOGY

The purpose of this study was to develop a competency framework to guide the professional education of master strategists. This chapter is a discussion of the research methodology used in this study. The methodology discussion has seven major headings. The first section is a description of the research model. These works provide a description of the Delphi technique. The second section is a description of the population and the process for identifying individuals to participate in the research effort. The third section is a discussion of the instrumentation used to solicit participant responses that became research data. The fourth section is a description of the research procedures that framed how this study was organized and conducted. The fifth section is a discussion of the data analysis strategy to discern meanings from participant responses. The sixth section is a description of methods to ensure quality in data collection and analysis. The final section is a summary of the methodology for this study.

Research Model

The goal of this study was to inform development of a professional education program that, today, does not yet exist—this study looked to the future. Dewar (2001) observes that researchers have a wide range of choices when choosing a model for exploring the future. In all the choices, the future remains behind a shroud of uncertainty and no method will lead to definitive findings. Technology Futures,

Incorporated provides five categories of ways to think about the future. The taxonomy is available online at http://www.tfi.com (last viewed 24 May 2005). The first approach to study the future is extrapolation. Extrapolators believe that the future is a logical extension of the past. The methods involve mathematical models and statistical analyses. Second, pattern analysts seek to identify past situations and relate them to the future. The methods involve historical analysis and recursive feedback models. Third, goal analysts stipulate that key individuals, organizations, or institutions shape the future. The methods involve analyzing stakeholder activities and trends such as sources of new patents. Fourth, counter punchers hold that random, unpredictable events shape the future. The methods involve environmental scanning and multiple scenarios to provide flexible responses as the future unfolds. Finally, intuitors believe the future is a product of a complex mixture of inevitable events, activities of influential people, and institutional programs. The methods involve structured and unstructured interviews and the Delphi technique that maximizes the talent, experience, insight, and knowledge of a panel of experts. Delphi studies are useful in exposing differences of opinion as well as novel ideas without exposing participants to direct confrontation.

Wilhelm (2001) observes that social science research may fall outside a "pure positivistic or scientific" methodology (p. 6). He notes that in situations where there is incomplete theory on cause and effect or insufficient data, the Delphi technique "enables the researcher to obtain relevant intuitive insights of experts and use informed judgment in a systematic manner" (2001, p. 6). Linstone and Turoff (1975) offer that the Delphi method is appropriate when research problems do not fit

established analytic techniques or when expense and distance make in-person meetings impossible.

This study followed an accepted approach for competency studies by forming a Delphi panel of experts to identify the most important competencies for a master strategist (McCoy, 2001; Williams, 2000). Presser and Blair (1994) report that, in comparison to three other questionnaire development approaches, expert panels "were most productive in the number of problems identified" (p. 73) and the most economical.

Dalkey and Helmer (1963) find that the Delphi technique "is more conducive to independent thought on the part of the experts and to aid them in the gradual formation of a considered opinion" (p. 459). As originally designed, the Delphi method "involves the repeated individual questioning of the experts (by interview or questionnaire) and avoids direct confrontation of the experts with one another" (p. 458). In studies that are designed to explore the future, "it cannot even ideally be expected that the final responses will coincide, since the uncertainties of the future call for intuitive probability estimates" that are unique to each panelist (p. 459). Dewar (2001) reports that while overall consensus may not be a realistic goal, panelists do reach a point of response consistency – where they no longer revise their answers.

Patterns in the review of literature indicate that important competencies do not routinely appear as an observable or measurable construct (Brown, 1993; Lee, 2001; Lester, 1995). The most important competencies for master strategists emerge from reciprocal interactions between ends, ways, and means (Chilcoat, 1995). A particular

competency construct may appear in the form of a future need or in practice as a harbinger of theory and research (Briscoe & Hall, 1999; Brown, 1993; Lester, 1995).

Dalkey (1969) describes information that precedes formal theory and systematic research as knowledge that exists in the forms of wisdom, insight, and informed judgment—all qualities of master strategists (Chilcoat, 1995; Metz, 1991; Ohame, 1982). The Delphi model is a systematic way to capture informed judgments from a panel of experts—to produce new knowledge in a process that can be replicated (Ziglio, 1996). The Delphi technique was selected in this study as a framework to structure exchanges between experts in national security strategy. The Delphi model mediated factors of geographical dispersion, time constraints, and travel restrictions to enable experts to participate from their home stations (Linstone & Turoff, 1975).

As a research model, the Delphi method is a creation of the RAND Corporation. Dalkey and Helmer (1963) describe the intent of "Project DELPHI" "to obtain the most reliable consensus of opinion of a group of experts" (p. 458). Delphi studies involve a series of questionnaires with panelists receiving controlled feedback. Early Delphi studies were designed to produce quantitative data. For example, the number of bombs to destroy a given target or the year a futuristic type of technology might be available. The Delphi method leveled the intellectual playing field through anonymous responses. The concept of anonymous responses allowed independent thought and the gradual development of an opinion. Controlled feedback or controlled interaction provides the means to introduce factors from other panelists for consideration "without introducing unnecessary bias" (p. 459).

A RAND researcher also made the most severe criticism of the Delphi method as a viable research technique. Sackman (1975) criticized the Delphi technique as a scientific procedure using the arguments bound by psychometric measurements similar to Barrett and Depinet (1991). Sackman's (1975) thrust was that Delphi studies fall outside the scientific paradigm's rules for scholarly research. Rowe, Wright, and Bolger (1991) note that subsequent studies have supported the contention that Delphi studies do not fit the scientific paradigm requirements to be objective in the sense that the researcher must "stand behind a thick wall of one-way glass observing nature as she does her thing" (Guba, 1990, p. 19). Linstone (1975) holds that the Sackman critique relied on "poorly executed applications" (p. 573) and that Sackman ignored "significant supporting research" (p. 573).

Rowe et al. (1991) report that each Delphi study has unique expert panel characteristics and its own contextual setting that make "comparisons between Delphi studies unrealistic" (p. 235). The evidence supports the methodological core components of the Delphi method in that "anonymity seems sensible (at least anonymity at the ultimate judgmental stage); iteration itself may be promising for improving judgment through induced deliberation; and feedback can widen knowledge and stimu-late new ideas" (p. 249). Wilhelm (2001), as well as Story, Hurdley, Smith, and Saker (2001) support the Delphi method for social science research. The Delphi technique is a viable approach that enables experts to "deal with a complex problem systematically ... it produces useful information in either the paper-and-pencil mode or the computer mode" (Wilhelm, 2001, p. 14).

Population

Ziglio (1996) cautions that the quality of a Delphi study relies on the selection of experts holding accepted credentials and that specific measures should guide the identification and selection process. Wilhelm (2001) notes that scientific paradigm rules for statistical sampling from a designated population do not apply to selecting panelists for a Delphi study. Wicklein and Rojewski (1999) stipulate that the research standard in selecting Delphi panelists rests on expertise. The Delphi standard of expertise stands in stark contrast to the scientific research paradigm standard of random samples that establish equitable representation of the population—larger samples constitute a higher quality study.

Ziglio (1996) stipulates that a small group of ten experts will produce accurate results and Brockhoff (1975) finds that in fact-finding studies, as few as seven panelists can provide optimal results. In order to remain within the range of acceptable protocols, the minimum size of the panel of experts for this study was set at 10 members.

Previous Delphi researchers have defined experts as, "... well-informed, leading authorities in their respective fields" (Wicklein and Rojewski, 1999, p. 42). Westbrook (1997) defined experts as those people "... whose positions, responsibilities, and/or publications indicate expertise in the area" (p. 212). Chao and Dugger (1996) defined experts as those individuals having "... experience as consultants and teachers ... authors of articles or professional books" (p. 24). Scheele (1975) recommended that panelists come from stakeholders having a vested interest in the study's

outcome. Ziglio (1996) recommended that panelists have capabilities to present ideas in a clear fashion.

The population for this study was professional strategists in the field of national security. In order to satisfy the protocols just discussed, the initial list of potential participants was identified through three search axes. First, names of potential strategists were drawn from a search of scholarly literature dealing with research into characteristics of strategists, national security strategy, and professional military education. Second, names of potential strategists were identified from Army War College faculty and staff. Finally, individuals identified in literature and at the Army War College provided peer nominations. All potential panelists were vetted with the Chair of the dissertation committee, a graduate of the U.S. Military Academy, and a dissertation committee member with previous assignments as President of the National Defense University and Commandant of the U.S. Army War College.

The participants were contacted initially through telephone calls or electronic mail. They were provided information describing the purpose of this study and the methodology. A formal invitation to participate was extended to those who expressed an interest in the study. The invitation letter provided an overview of the procedures and a description of qualifications of the invited members. A list of the participants is provided at Appendix A.

Instrumentation

This research project followed a RAND Delphi model that is more qualitative in nature. Rather than asking experts to project numbers, the experts were queried for

their opinions—in narrative style rather than point predictions. Also, the more recent Delphi heuristic method retains the traditional strengths of iteration and controlled feedback while incorporating Web-based means of communication to allow asynchronous responses. The newer model has been used on multiple occasions with consistent, high quality outcomes (Dewar, 2001).

Dalkey and Helmer (1963) and Dewar (2001) highlight that heuristic Delphi studies establish a situated frame of reference that enables the panel of experts to develop unconstrained inputs. The heuristic, unconstrained Delphi method moves beyond the techno-rational approach that requires panelists to respond to an initial questionnaire. Rather, panelists are required to demonstrate the qualities of an Information Age professional education program that relies on intangible cognitive constructs such as wisdom, judgment, creativity, and reflection (Cheetham & Chivers, 1998; Chilcoat, 1995; Lester, 1995; Sanchez & Heene, 1997a; Sternberg, 1997).

The frame of reference for this study was established in a short vignette. The vignette storyline placed the panelists in a unique situation of being able to engage a "time traveler" from 20 years into the future. The time traveler knew all there is to know concerning competencies a national security master strategist will need to possess in the year 2022. The story line stipulated that the time traveler was mute and could, therefore, provide only with a yes or no response. The time traveler represented a source of perfect knowledge. The requirement to pose questions for a yes or no response was to cause specific questions about what the panelists wanted to know—to give deep thought to long-range concerns (Dewar, 2001). The Round One instrument consisted of a vignette as described above with instructions that included

a task to ask the time traveler 10 questions concerning competencies for a master strategist. The instruments in subsequent rounds consisted of a consolidated list of panelist inputs from the previous round, i.e., Round One questions served as the Round Two instrument. The vignette is provided at Appendix B.

Procedures

This was a Web-based Delphi study. Turoff and Hilz (1995) report that for over 20 years researchers have been using computers and networks to support Delphi studies. Dewar (2001) reports that the computer and World Wide Web provide the means for a Delphi panel of experts to conduct a meaningful, asynchronous dialogue on complex issues. Turoff and Hilz (1995) agree and suggest that combining computers and the World Wide Web expand a Delphi panel's potential for efficiency and effectiveness.

Price (1975) notes that computer-assisted Delphi studies reduce the time required to exchange information—the function of transporting information in paper form through the mail system. Electronic means of communication also allow panelists greater flexibility in managing time because responses can be stored in electronic form to be readily edited. Computer-based studies reduce the time required for the researcher to analyze responses and then provide feedback to panelists. Computer-based studies do not reduce the time each panelist requires to develop a response.

Turoff (1991) believes that combining the Delphi method and network computer-based communication produces a synergistic effect—the whole is greater than the sum of the parts. The promise of "real improvement in the group process lies in the

fact that individuals can deal with the part of the problem they can contribute to at a given time, regardless of where the other individuals are in the process" (p. 96).

This study used a World Wide Web home page as the primary link between panelists and study activities. Electronic mail was the primary means of communication. The research project consisted of three rounds of response development, asynchronous inputs, and controlled feedback. Each Delphi round had specific goals and tasks for the panel of experts.

The goal of Round One in this study was to develop a base set of questions that helped to identify the competencies of master strategists in national security. Round One consisted of three tasks for the panelists: (1) to read and understand the opening vignette story line that provided panelists access to a source of perfect knowledge concerning the competencies a master strategist might require in the future; (2) to think specifically about the competencies they wanted to know about; and (3) to develop 10 questions concerning competencies a master strategist would require in the future.

The goal of Round Two was to refine the list of questions developed in the first round. Round Two consisted of two new tasks for the panelists: (1) to review the consolidated list of questions from the first round; (2) to pose 10 questions to the perfect source of knowledge from the consolidated list or by developing new questions. The list of Round Two questions was provided to panelists as the start point for Round Three.

The goal of Round Three was to identify the most important questions concerning competencies for a master strategist. In Round Three, each panelist provided the six

most important questions by choosing from the consolidated list or by developing new questions. Also, each panelist was given two new tasks. The first was to provide a brief description of how each question contributed to a competency framework for professional education as it pertains to master strategists in national security. The second was to provide a rank order to the six Round Three questions. At the conclusion of each round, the question list was reviewed so that the question set for the following round contained no duplications.

Each round provided responses in the form questions that could be answered with a response of either "yes" or "no." The responses were collected in a database located on a server at the Center for Distance Learning Research, Texas A&M University. The next section describes procedures to achieve the analysis goal to identify the extent to which panelists were: (1) posing identical questions that would indicate convergence; (2) asking questions about the same kinds of competency issues; and (3) adopted similar rational for relating questions about competencies to the professional education of national security strategists.

Data Analysis

Tukey (1962) makes the point that in analysis "Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise" (p. 12). The issue is that data analysis is an ongoing, reciprocal process of refining approximate answers because "knowledge of what the problem really is will at best be approximate" (p. 14). The analysis principle becomes that recognizing approximate knowledge increases

alertness to “each particular instance of particular ways in which our knowledge is incomplete” (p. 14). When the analysis goal is to discover new knowledge, there is a need “for a free use of ad hoc and informal procedures in seeking indications” (p. 62)—to let the data make revelations off the record. Therefore, data analysis need not be constrained, in all cases, by arbitrary rules proponents of the scientific paradigm hold sacrosanct.

The procedures used in this study generated qualitative data. Marshall and Rossman (1995) suggest that qualitative data analysis is a four-stage process. First, organizing data requires entering information into a database to enable a systematic analysis. Second, generating categories is “the most difficult, complex, ambiguous, creative and fun” (p. 114) activity in the analysis of qualitative data. Establishing categories consists of applying a typology to identify patterns and themes “to naturally occurring variations in observations” (p. 115-116). The third activity in qualitative data analysis is to examine the categories to determine if the data sets are “useful in illuminating the questions being explored” (p. 116). The final analysis activity is to challenge the data patterns in a search for alternative, plausible explanations. In challenging the patterns, the aim is to strengthen “an argument that builds a logical interrelationship ... and summarize how conclusions relate to previous and future research” (p. 117).

The nature of the Delphi model requires that a researcher become a part of the process. Delphi researchers are facilitators, interpreters, sources of information and, therefore, data-gathering instruments (Dewar, 2001; Linstone, 1975; Rowe et al., 1991). The Delphi model stipulates that data analysis is an ongoing process (Dewar,

2001; Linstone, 1975; Rowe et al., 1991). Erlandson, Harris, Skipper and Allen (1993) give legitimacy to data collection and analysis going "hand-in-hand as theories and themes emerge during the study" (p. 111).

Marshall and Rossman (1989) extend the Information Age concept of data analysis as "the process of bringing order, structure, and meaning to the mass of collected data. It is a messy, ambiguous, time-consuming, creative, and fascinating process" (p. 112). The aim of qualitative data analysis is "a search for general statements about relationships among categories of data" (p. 112). In contrast to the comparatively precise quality that statistical tests bring to quantitative data analysis, the process of qualitative data analysis is non-linear, "it is not neat" (p. 112).

In this study, analysis activities began during the Round One responses and proceeded through each successive round. Qualitative data generated during each Delphi Round was maintained in a separate Microsoft Access database table. Following each round, content analysis was used to sort panelists' questions into streams of thought (Erlandson et al., 1993) concerning competencies for a master strategist. The streams of thought were classified along a continuum that ranged from identical questions, to questions about the same topic, to questions that dealt with unique issues. Responses from each round were compared chronologically and across categories. Comparisons within and between categories helped to identify themes and to categorize issues within those themes.

The analysis taxonomy spanned across four dimensions in order to identify the core considerations for designing a professional education framework for master strategists. The first dimension dealt with themes and patterns embedded in the

database of panel member responses (de Wit & Meyer, 1998) and professional development (Connect, 1998). The second dimension dealt with the theory framework that consisted of the theory of triarchic intelligence (Sternberg, 1996a, 1996b, 1997), activity theory (Engström, 2000; Jarzabkowski, 2003) and competency theory (Sanchez & Heene, 1997b). The third dimension dealt with the cognitive, behavioral, personal, values, and meta domains of the professional competency model (Cheetham & Chivers, 1998). The fourth dimension dealt with the core construct of a master strategist as a strategic leader, theoretician and practitioner (Chilcoat, 1995). The issues that emerged as common concerns across the four dimensions were analyzed to identify prevalent themes and patterns that describe a professional education framework for master strategists.

Quality Considerations

Erlandson et al. (1993) describe protocols to ensure high quality in research outside the scientific paradigm. First, a study must provide measures to ensure trustworthiness or credibility with the target audience—that findings from the study will be useful for practitioners. The credibility of a study speaks to the "compatibility of constructed realities that exist in the minds of the inquiry's respondents with those that are attributed to them" (p. 30). Credibility derives from prolonged engagements, persistent observation, and member checks.

The three Delphi rounds provided a prolonged period of iterative engagements. Successive engagements with intervening controlled feedback contributed to the credibility of the collection and analysis phases of this study. Also, the function of

continuing participation and controlled feedback inherent to the Delphi model provided member checks that helped to ensure the ongoing collection and analysis effort remained true to each panelist's intentions.

Erlandson et al. (1993) frame the second protocol around the issue of transferability. Lincoln and Guba (1985) discuss transferability of a study as "the extent to which its findings can be applied to other contexts or with other respondents" (p. 290). In contrast to the notion of generalizability associated with studies following the scientific paradigm, transferability concerns the "interrelationships and intricacies of the context being studied" (Erlandson et al., 1993, p. 32). The standard is to enable "observers of other contexts to make tentative judgments about applicability of certain observations for their contexts and to form working hypotheses" (p. 33).

In this study, the transferability protocol was addressed through the eclectic panel of experts. The panel was formed with multi-disciplinary representation from the fields of management, strategy, policy, economics, and leadership. Panel members came from the active military, professional military education institutions, higher education institutions, as well as consulting firms specializing in strategy and policy matters.

The final quality protocol addresses dependability—the measures that ensure that a future study in the same setting with the similar panel qualities would produce "repeatable findings" (Lincoln & Guba, 1985, p. 290). Erlandson et al. (1993) state that dependability is a function of "providing an audit trail that provides documentation ... of the process ... of the inquiry" (p. 34).

The audit trail for this study was provided through a complete description of the research model, study procedures, and qualities of the panel of experts. There must be a cautionary note that this study followed a Delphi technique that required panelists to engage in intuitive thinking (Dalkey & Helmer, 1963; Wilhelm, 2001) and that intuitive thinking about the future induces a dynamic quality to the findings (Dalkey & Helmer, 1963; Dewar, 2001). This study was designed to explore the future and looking back to Tukey's (1962) admonition, findings that capture approximations of how the future will be different from the present are like nuggets of gold in the bank of knowledge that informs professional education of master strategists. Thus, while evidence was provided to allow a replication of the research process (Ziglio, 1996), this research model was not designed to suggest the exact procedures would bring the same findings.

Summary

This chapter was a description of the research model, population, instrumentation, procedures, data analysis practices, and quality controls for this study. This was a Web-based Delphi research project that followed a heuristic approach. The data collection process consisted of three Delphi Rounds. The data analysis component of this study involved content analysis of qualitative inputs from a panel of experts in national security strategy. A panel of experts in national security identified and related competencies to a professional education program for master strategists. The results of this study will be presented in the following chapter.

CHAPTER IV

RESULTS AND ANALYSIS OF THE DATA

The purpose of this study was to develop a framework to guide the professional education of master strategists. Specifically, the study was designed to answer three questions that dealt with (1) content domains of the most important competencies of a master strategist; (2) the contributions that the most important competencies offer toward development of a professional education program; and (3) the most important competencies of a master strategist. This chapter is a discussion of the results of the study and analysis of the data. This chapter has five major sections. The first section is an overview of the of the Delphi process. The purpose was to describe activities occurring in the three Delphi Rounds. The second section is a discussion of patterns and themes in the data. The purpose was to develop a response to research question one. The third section is a discussion of panel member statements of rationale concerning how their responses in the final Delphi round inform development of a professional education for master strategists. The purpose was to develop a response to research question two. The fourth section is an analysis of panel member perceptions concerning the most important competencies in a master strategist professional education program. The purpose was to develop a response to research question three. The final section is a summary of the results and analysis of the data.

Overview of the Delphi Process

This section is an overview of the research model and of activities in each of the three Delphi rounds. The research model was a Web-based Delphi that employed a panel of experts in national security strategy. The panel of experts (Appendix A) had the task of identifying the competency framework of a professional education program for a master strategist in national security. Tukey (1962) counseled that posing the best question is a critical step in research. Accordingly, the research methodology followed a blueprint that focused the panel of experts on developing the best question concerning attributes for a future master strategist as well as for the professional education program. In each Delphi Round, the panel of experts engaged a time traveler having perfect knowledge concerning professional education for master strategists. The set-up for this study is provided in Appendix B.

The purpose of Round One was to develop a base set of questions. The Web pages used for Round One are at Appendix C. The initial panel of experts consisted of 17 members. The instructions called for panelists to develop 10 questions concerning competencies a master strategist would require in the future. There was one caveat—the questions had to be constructed for a "yes" or "no" answer. At the conclusion of Round One, 16 panelists posed a total of 156 questions—two panel members asked fewer than 10 questions. A composite list of all Round One responses is provided at Appendix D.

The purpose of Round Two was to refine the list of questions developed in the first round. The Web pages used in Round Two are at Appendix E. At the beginning of Round Two, the panel of experts consisted of 16 members. The

instructions outlined two tasks. The first task was to review the list of questions from Round One. The second task was to pose 10 questions according to any combination of three options. The first option was to develop a new question. The second was to edit a Round One question. The third option was to repeat a question from Round One. At the conclusion of Round Two, 15 panelists provided a total of 135 questions. Panelists chose 122 questions from the first round list and developed 13 new questions. Among the questions carried forward from the first round, two or more panelists chose the same question fourteen times; 12 questions were selected twice, and two questions were selected three times. A composite list of all Round Two questions is at Appendix F.

The purpose of Round Three was to identify the most important questions. The Web pages used in Round Three are at Appendix G. At the beginning of Round Three, the panel of experts consisted of 15 members. The researcher outlined three tasks in the instructions. The first was to pose six questions according to any combination of the options described for the second round. The second task was to rank order the six questions. The final task was to provide a brief description of how each question contributed to the master strategist professional education competency framework. At the conclusion of Round Three, 12 panel members provided a total of 68 questions. The list of questions contained 57 entries from the first round, five entries from the second round, and six new questions. Among the questions repeated from the first two rounds, two or more panelists chose the same question 16 times. Panel members selected 12 questions two times, three questions were selected three

times, and one question was selected four times. A composite list of all Round Three questions is at Appendix H.

At the conclusion of the data collection phase of this study, the panel of experts developed a total of 359 questions focused on the professional education of a master strategist. Out of that total, there were 30 instances where two or more panel members submitted the same question. In the first round panelists asked 156 different questions. In the second round, the number of different questions dropped to 119 or 88% of the Round Two total. In the third round, the number of different questions dropped to 47 or 69% of the Round Three total.

The Delphi procedures in this study generated three functional lines of data. The first data line concerned questions in narrative form; the input provided in each round. The second data line provided rationale on how questions aided development of a professional education program; additional input from Round Three. The final data line provided a rank order of Round Three questions and rationale. The three data lines were used singly and in combinations as a unique data set for developing a response to each research question. The data set for research question one combined the first and third data lines. The data set for research question two relied on the second data line. The data set for research question three combined data lines two and three.

In applying the data analysis plan described in Chapter III, content analysis followed two basic strategies to derive meaning and understanding from the functional data lines. In research questions one and two, a series of discussions enabled content analysis of questions that panel members posed concerning future

master strategist competencies and rationale to describe how questions informed development of a professional education program. In regards to purpose, the discussions provided the means to engage panel member responses on a personal level. The discussions followed a five-step process. The first two steps were to read each panel member response and then to reflect on the words to hear the intended message. The third step was to reread each response to ensure understanding of the meaning. The fourth step was to organize the discussion in an affinity diagram. The affinity diagram for each discussion served to highlight relationships in panel member responses to a given research question. The final step was to repeat the process for confirmation. The data lines supporting research question one generated four discussions focused on identifying content domains. The data line supporting research question two generated five discussions focused on framing the requirements or conditions that competencies must put in place for a master strategist professional education program. In research question three results from the first two research questions helped to identify a competency framework to inform the professional education of master strategists.

The next section is a discussion of the process that generated a response to research question one. The process flow dealt with a data set that combined the data line of narrative questions and the data line of a rank order of Round Three questions.

Research Question One

The first research question was, “What are the content domains of the most important competencies of a master strategist as perceived by qualified professional strategists?” This section consists of five major headings. The first heading concerns development of a data set. The second heading deals with building the data set into a sturdy framework of patterns and themes. The third heading carries forward the framework of patterns and themes to identify panel member perceptions of content domains for master strategist competencies. The fourth heading is a consideration of plausible alternative explanations of the content domains. The final heading is a summary of the analysis of the data related to research question one.

Developing a Data Set

Marshall and Rossman (1995) highlighted the necessity of transforming raw input into a data set that enables analysis. This section is a discussion of panel member inputs during the three Delphi rounds. The purpose was to identify a data set suitable for developing a response to research question one. The data set development process involved four steps. The first step was to reduce the entire question list through a filter of similarity to identify the most frequently asked questions. The second step took a parsimonious approach to extract questions panel members ranked as most important in Round Three. The third step in developing the data set was to identify the questions that appeared in both categories—being most frequently asked and most important. The final step in developing the data set was to identify the questions that framed panel member core interests across the three

Delphi rounds—the optimal data set for research question one. The resulting data set (Tables 6 and 7) was the foundation that supported identification of the content domains of a professional education program for master strategists.

Sorting to Identify Most Frequently Asked Questions

In rounds two and three, panel members had the options of developing a new question, editing a question from the composite list of questions, or choosing a question from the composite list as written. By round three, therefore, a question could have a frequency of three selections and be the question of one panelist. In order to populate a data set with questions having potential for more broad based appeal, only those questions with a three round cumulative selection frequency of at least four were adopted to the most frequently asked category.

Seventeen different questions met the criteria of being asked a minimum of four times (Table 6). At the micro level of exact wording, in any single round, only one question was selected four times and five questions were selected three times. Across all rounds, panel members chose a single question a total of seven times. The most frequently asked question concerned direct communication with other people as a significant part of strategic level interaction and leadership. Across all rounds, two questions were selected six times. One of the questions that was asked six times dealt with global military and economic capabilities and the influence of technology on the balance of power. The other question that was posed six times dealt with political-military and security relationships. Across the three rounds, six questions were selected five times. The dominant theme dealt with the impact culture and

regional concerns exert on security strategy. The remaining eight questions were asked the minimum of four times. The 17 most frequently asked questions represented a total of 81 selections or 23% of the 359 questions asked in the three rounds. The 17 most frequently asked questions all originated in Round One.

TABLE 6. Panel Member Questions Listed by Most Frequently Asked Criteria

Question Database Id.	Question Text	Three Round Selection Total
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?	7
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?	6
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?	6
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?	5
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?	5
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?	5
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?	5

TABLE 6. Continued

Question Database Id.	Question Text	Three Round Selection Total
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally – shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?	5
140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?	5
2	Is the nation-state still the primary actor in international relations?	4
68	Are there entirely new domains of knowledge?	4
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?	4
16	Will future strategists of 20202 require a comprehensive mastery of classical strategic theory?	4
127	Are there new means of conflict resolution?	4
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law? (Must fully understand to philosophical basis of laws)	4
7	Are there security threats that political leadership does not comprehend?	4
43	Were there substantial changes to the political philosophies, institutions, and processes within the US – changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision-making?	4

Note: Questions with a Database Id. 1-199 are Round One Responses.

Sorting to Identify the Top-Ranked Questions

The second step in developing the data set was to identify the questions panel members asked during Round Three that carried a priority rank of either one or two. In the third round, the task list included a requirement for panel members to rank order their responses. In order to develop a parsimonious question list, a step-wise,

content-focused reduction procedure informed a dividing line between priority ranks two and three. The questions having a priority rank of either one or two were adopted to the list of top ranked questions because working down the priority list data became less important and, more to the point, after priority two an "emergence of regularities" (Lincoln & Guba, 1985, p. 350) or convergence became evident.

Eighteen different questions met the criteria of holding a rank of either one or two (Table 7). Three questions had multiple selections while 15 questions appeared on the list once. One panel member opted to make no rank order designations. At the micro level of exact wording, the rank order question list contained one question three times. As in the list of most frequently asked questions, panelists gave higher priority to the question that concerned direct communication with other people as a significant part of strategic level interaction and leadership. Two other questions appeared in the rank order list two times. One of the top ranked questions appearing two times concerned the role of nation states as primary actors in international relations. The other twice selected question on the rank order list dealt with master strategists having a grasp of economic systems in order to develop feasible strategic options. The three questions appearing most often on the rank order list also appeared on the list of most frequently asked questions. The rank order list of questions contained fifteen different Round One questions, one Round Two question and two Round Three questions. Including the questions selected multiple times, the top ranked questions represented a total of 22 selections or 6% of the 359 questions asked in the three rounds.

Table 7. Panel Member Questions Listed by Top-Ranked Priority Criteria: Eighteen Questions Panel Members Ranked in Priority Number One Or Two

Question Database Id.	Question Text	Total Number of Times Ranked As 1 or 2
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?	3
2	Is the nation-state still the primary actor in international relations?	2
131	Must a master strategist in 2002 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?	2
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?	1
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?	1
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?	1
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?	1
16	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?	1
127	Are there new means of conflict resolution?	1
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?	1
17	Is the nation-state model still valid for understanding international relations?	1
21	Will the master strategist require foresight?	1
57	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?	1
67	Will the master strategist be required to set constructive, realistic objectives?	1
119	Does the strategist have a vision that drives his/her behavior?	1
222.08	Will the master strategist be better served by a technical rather than a generalist background?	1

TABLE 7. Continued

Question Database Id.	Question Text	Total Number of Times Ranked As 1 or 2
333.02	How proficient must a strategist be in his/her understanding of foreign cultures, language, politics, and history?	1
333.06	What must a strategist know about the strategic application of military force as an instrument of national security policy?	1

Note: Questions with Database Id. 1-99 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses

Sorting to Identify the Most Frequently Asked and Top-Ranked Questions

The third step in identifying a data set was to identify the questions that met the dual criteria of being on the most frequently asked and the top ranked lists (Tables 6-7). Ten different questions appeared on both lists. A single question received ten votes; seven selections on the most frequently asked list and three selections on the rank order list. The question having greatest interest, as in the previous two lists, concerned direct communication with other people as a significant part of strategic level interaction and leadership. One question received a total of seven votes; six on the most frequently asked list and one selection on the rank order list. The question having the second greatest interest dealt with global military and economic capabilities and the influence of technology on the balance of power.

Five questions received a total of six votes and fell in two categories. In the first category, three questions had five selections on the most frequently asked list and one selection on the top rank list. First category questions dealt with a master strategist having knowledge about major theories and history of conflict among regions; knowledge about relationships between policy formulation and

environmental and economic models; and, the occurrence of conflict between different religious belief systems. The two second category questions dealt with the role of nation states as actors in international relations and the master strategist having knowledge about economic systems in order to develop feasible strategic options.

Three questions received a total of five votes, four selections on the list of most frequently asked questions and one selection on the rank order list. The five-vote questions dealt with three issues. One concerned the requirement for a master strategist to have a mastery of classical strategic theory. Another dealt with the existence of new means of conflict resolution. The third concerned values and whether Judeo-Christian ethics remained the basis for national and international law.

Identifying the Data Set for Research Question One

The final step in establishing a data set for research question one was to identify the questions that framed panel member core interests embedded in the most frequently asked and most important questions (Table 8). The 17 items on the list of most frequently asked questions (Table 6) represented 81 panel member selections and 23% of the 359 questions developed in three Delphi rounds. The 18 items on the list of top ranked questions (Table 7) represented 22 panel member selections and 6% of the 359 questions developed in three Delphi rounds. The 10 items that met the dual criteria to be on both lists represented 62 panel member selections and 17% of the 359 questions developed in three Delphi rounds. In combining totals, the list of most frequently asked questions and the list of top ranked questions represented

103 panel member selections and 29% of the 359 questions developed in three Delphi rounds. Of the 103 panel member responses on the combined lists, 100 or 28% originated in Round One.

TABLE 8. Summary of Panel Member Questions on the List of Most Frequently Asked Questions and List of Most Important Questions by Total Selections and Percent of All Questions in Three Delphi Rounds (N=359)

Question Database Id.	Selections Most Frequently Asked Question (Table 6)	Selections Most Important Question (Table 7)	Total Selections as Most Frequently Asked and Most Important
109	7	3	10
27	6	1	7
2	4	2	6
131	4	2	6
88	5	1	6
35	5	1	6
73	5	1	6
16	4	1	5
127	4	1	5
150	4	1	5
Sub Total Ten Items on Both Lists / Percent of All Questions (N=359)	48 / 13%	14 / 4%	62 / 17%
11	6	0	6
97	5	0	5
58	5	0	5
140	5	0	5
7	4	0	4
43	4	0	4
68	4	0	4
17	0	1	1
21	0	1	1
57	0	1	1
67	0	1	1
119	0	1	1
222.08	0	1	1
333.02	0	1	1
333.06	0	1	1
Total / Percent of All Questions (N=359)	81 / 23%	22 / 6%	103 / 29%

Note: Questions with Database Id. 1 – 199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses

Frequency analysis of the most frequently asked and most important questions indicated that panel members developed a primary question set in the first Delphi round (Table 8). Furthermore, based on a measure of exact wording in questions, panel members provided no clear indication of consensus on core interests. On the other hand, while combining entries as a most frequently asked question and most important question represented 103 total selections—there were only 25 unique questions because some had multiple selections. The 25 unique questions represented 29% of all responses across three Delphi rounds. Thus, the optimal data set to capture panel member core interests across the three Delphi rounds emerged from the 25 questions that made up the lists of most frequently asked and most important questions. The next section deals with content analysis of the 25 questions that make up the data set for question one. The aim was to classify question content and examine the classification categories for a response to research question one.

Establishing a Framework of Patterns and Themes

Tukey (1962) reminds that when the research goal is to develop new knowledge, there is a pressing need "for a free use of ad hoc and informal procedures in seeking indications" (p. 62)—to let the data make revelations. Marshall and Rossman (1995) recommend the use of a typology to identify categories of similar patterns and themes. The categories of patterns and themes provided the basis to use data in developing a response to research question one.

The panel of experts posed 25 unique questions in the lists of most frequently asked and highest priority questions (Tables 6-7) and these questions constituted the

data set for developing a response to research question one. There was no pre-existing classification plan to guide the search for patterns and themes. The recursive listening process involved reading the 25 questions, reflecting on the words, re-reading, reflecting on the meaning, sorting along patterns and themes, and, finally, repeating the process.

The framework of patterns and themes served to draw out the deeper meaning embedded in questions panel members posed during the three Delphi rounds. Patterns and themes helped to demonstrate a level of consensus beyond the exact wording of questions—intellectual consensus. The patterns and themes provided a setting in content domains that serve as a stage setter for all subsequent discussions regarding competencies for a master strategist. The procedure to develop a response to research question one involved analysis of the 25 questions that populated the research one question data set. The aim was to listen to the most important data—to let the panel of experts publish their revelations in a series of discussions.

In one discussion, panel members described a master strategist profile (Table 9). The profile encompassed eight questions dealing with attributes for leading, planning, and analyzing. Leader-based questions dealt with interpersonal exchanges, unifying allies as well as influencing opponents, and visioning. Plan-focused questions dealt with attributes of foresight, setting objectives, and developing feasible plans. Analysis-focused questions dealt with attributes for gauging accurately the potential for political coalitions, understanding issues that unite allies as well as potential fissures of disunity among opponents. A final question set

probed to determine if future master strategists will have foundation knowledge that is more technical than generalist in nature.

TABLE 9. Panel Member Discussion One Concerning Eight Data Set of Questions Appearing on the List of Most Frequently Asked Questions or on the List of Questions with a Priority Rank of One or Two Panel Member Questions Related to a First Discussion of Research Question One Patterns and Themes

Question Database Id.	Question Text	List of Most Frequently Asked Questions	List of Top Ranked Questions
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?	Yes	Yes
21	Will the master strategist require foresight?	No	Yes
57	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?	No	Yes
67	Will the master strategist be required to set constructive, realistic objectives?	No	Yes
119	Does the strategist have a vision that drives his/her behavior?	No	Yes
140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?	Yes	No
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?	Yes	No
222.08	Will the master strategist be better served by a technical rather than a generalist background?	No	Yes

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In a second discussion, the panel delved into the security environmental suprastructure (Table 10). In seven questions, panel members expressed interest in the evolution of actors involved in international relations and tools available to the master strategist. Actor-focused questions primarily dealt with nation-state roles. Panel members framed questions on the primacy of the nation-state as an organizing construct both for understanding the world and for developing security strategy. A complementary dialogue focused on understandings or changes in the political-military construct of international treaties, agreements, and organizations. The framing perspective concerned the master strategist facing counter-parts that emerged as actors from a new set of security relationships. Tools-based questions highlighted panel member interests in the means of strategy. A futuristic means-related issue dealt with the development of new methods to resolve conflict. Other means-related issues dealt with the use of military force as an instrument of national security policy and integration of domestic political priorities into security policy.

TABLE 10. Panel Member Discussion Two Concerning Seven Questions Appearing on the List of Most Frequently Asked Questions or on the List of Questions with a Priority Rank of One or Two Panel Member Questions Related to a Second Discussion of Research Question One Patterns and Themes

Question Database Id.	Question Text	List of Most Frequently Asked Questions	List of Top Ranked Questions
2	Is the nation-state still the primary actor in international relations?	Yes	Yes
127	Are there new means of conflict resolution?	Yes	Yes

TABLE 10. Continued

Question Database Id.	Question Text	List of Most Frequently Asked Questions	List of Top Ranked Questions
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly – advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?	Yes	Yes
43	Were there substantial changes to the political philosophies, institutions, and processes within the US – changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision making?	Yes	No
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings – military and political – changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?	Yes	No
17	Is the nation-state model still valid for understanding international relations?	No	Yes
333.06	What must a strategist know about the strategic application of military force as an instrument of national security policy?	No	Yes

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In a third discussion, panel members shifted to the intellectual domain (Table 11). In five questions, panel members showed equal interest in knowledge as a domain of intellectual activity and discipline specific theoretical knowledge. The questions that concerned knowledge as a domain of intellectual activity covered a

wide front. First, a futuristic query set probed to know if new knowledge domains existed. Another tack oriented on the need for a master strategist to be grounded in classical strategic theory.

TABLE 11. Panel Member Discussion Three Concerning Five Questions Appearing on the List of Most Frequently Asked Questions or on the List of Questions with a Priority Rank of One or Two Panel Member Questions Related to a Third Discussion of Research Question One Patterns and Themes

Question Database Id.	Question Text	List of Most Frequently Asked Questions	List of Top-Ranked Questions
68	Are there entirely new domains of knowledge?	Yes	No
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement – conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?	Yes	Yes
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health – changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?	Yes	Yes
16	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?	Yes	Yes
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?	Yes	Yes

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In the other half of the third discussion, panel members showed interest in discipline specific knowledge. On one level, panel members focused questions on conflict and crisis. The issue dealt with the occurrence of any incident that changed world views on the application of military power, economic assistance, or political involvement. The aim focused on concerns for a master strategist to understand the major theories, models, and histories of conflict involving regions or nation states. On a complementary level, panel members focused two question sets on economic theory. The strategic setting described changes in energy and food production, natural resources, and biological health. The aim focused on concerns for a master strategist to have an understanding of American as well as international environmental and economic models in order to develop feasible strategic options.

In a final discussion, panel members addressed the future trajectory of current security issues concerning the influence of values (Table 12). In five questions panel members took two approaches oriented on the same issue. One set of questions pointedly addressed the continuing influence of Judeo-Christian ethics and values on international law. Another question set pointedly addressed the continuing growth and influence of Islamic extremism. On the other hand, some panelists took a more general approach to the same issues. Panel members expressed interest in knowing the extent to which a master strategist must have a good understanding of the influence that culture and language have on understanding security threats as well as for policy development.

TABLE 12. Panel Member Questions Related to a Fourth Discussion of Research Question One Patterns and Themes

Question Database Id.	Question Text	List of Most Frequently Asked Questions	List of Top-Ranked Questions
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?	Yes	Yes
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?	Yes	Yes
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?	Yes	No
7	Are there security threats that political leadership does not comprehend?	Yes	No
333.02	Must a strategist have understanding of foreign cultures, language, politics, and history?	No	Yes

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses

The intent of having four discussions pointed to drawing out deeper meanings embedded in the data set. The key task involved identifying the recurring patterns and themes across the questions that comprise the data set. The next section is a discussion of analysis designed to develop a response to research question one.

Identifying Content Domains

The four panel member discussions highlighted patterns and themes embedded in the list of most frequently asked questions across all Delphi rounds and the list of

questions from the third Delphi round being in rank order first or second. The purpose of this section is to draw out from patterns and themes the content domains that frame the professional education framework for a master strategist. A content domain in this study was defined as categories of similar ideas relating to knowledge, skills, and understanding (Connect, 1997). Content domains were used as a way to assemble similar patterns and themes imbedded in questions Delphi panel members developed during the data collection phase of this study (Marshall & Rossman, 1995; Tukey, 1962). The aim in identifying content domains was to place panel member patterns and themes within the context of master strategist attributes developed in chapters one and two of this study.

The first panel member discussion described a master strategist profile that had attributes for influencing allies as well as opponents, for developing effective plans, and for gauging the political-military environment. The unifying profile theme from the first discussion emerged as attributes that Metz (1991) described as strength of character to influence thinking and that Chilcoat (1995) framed as strategic leader, theoretician, and practitioner. Across the profile the panel of experts drew attention to the master strategist as a unique individual having a dominant presence across the strategic landscape—effective insight, communication, plans, and influence. The title of the first content domain is personal attributes (Table 13).

TABLE 13. Panel Member Questions Related to the Personal Attributes Content Domain of the Professional Education Framework for a Master Strategist

Content Domain	Question Text	Question Database Id.
Personal Attributes	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?	109
	Will the master strategist require foresight?	21
	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?	57
	Will the master strategist be required to set constructive, realistic objectives?	67
	Does the strategist have a vision that drives his/her behavior?	119
	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?	140
	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?	97
	Will the master strategist be better served by a technical rather than a generalist background?	222.08

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In the second discussion, panel members focused on the nation-state as an organizing construct in international relations, on the current environment forcing the master strategist to engage new types of counterparts, and on futuristic concepts for resolving conflict. The overarching theme emerged as an interest in setting parameters and objectives that constrain and orient master strategist activities. The unifying theme from the second discussion dealt with a need for master strategists to balance contending needs of the domestic environment with protecting national interests (Downey & Metz, 1988). Concurrently, the master strategist must work to develop security strategies without an absolute model—the new security environment presents both traditional nation-state actors as well as non-traditional

actors such as terrorists and failed states (The National Security Strategy, 2002). The title of the second content domain is security framework (Table 14).

TABLE 14. Panel Member Questions Related to the Security Framework Content Domain of the Professional Education Framework for a Master Strategist

Content Domain	Question Text	Question Database Id.
Security Framework	Is the nation-state still the primary actor in international relations?	2
	Are there new means of conflict resolution?	127
	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly – advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?	27
	Were there substantial changes to the political philosophies, institutions, and processes within the US – changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision making?	43
	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings – military and political – changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?	11
	Is the nation-state model still valid for understanding international relations?	17
	What must a strategist know about the strategic application of military force as an instrument of national security policy?	333.06

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In the third discussion, panel members focused on concerns that a future master strategist be well-grounded in a wide range of theories that included economic

models, food production, natural resources as well as classical strategic theories. Earliest descriptions of the Athenian strategist centered on the intertwined character of political, economic, and military affairs (Cummings, 1995). Furthermore, according to Chinese traditions, strategists had the distinguishing qualities of being aware of changing circumstances and of rightly judging the implications of a given situation. Master strategists need the intellectual capacity to integrate histories of warfare, strategic concepts, and theories with components of national power (Chilcoat, 1995). The title of the third content domain is theory-based knowledge (Table 15).

TABLE 15. Panel Member Questions Related to the Theory-Based Knowledge Content Domain of the Professional Education Framework for a Master Strategist

Content Domain	Question Text	Question Database Id.
Theory-Based Knowledge	Are there entirely domains of knowledge?	68
	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement – conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?	88
	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health – changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?	73
	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?	16
	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?	131

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In the fourth discussion, panel members turned attention to the power of ethics and values from a wide ranging cultural perspective. The theme emerged as a futuristic interest in the extent of change in belief systems and the influence that specific belief systems exert on security matters. The twenty-first century operating environment elevates the need for master strategists to have an in-depth understanding of regional and national social issues (The National Security Strategy, 2002). A master strategist is multidimensional—operating simultaneously in disparate domains that include values and moral beliefs (Cheetham & Chivers, 1996; Ohame, 1982). A strategic leader is an ethical person and having respect for values is an inherent piece of the master strategist construct (Chilcoat, 1995). The title for the fourth content domain is culture and values (Table 16).

TABLE 16. Panel Member Questions Related to the Culture and Values Content Domain of the Professional Education Framework for a Master Strategist

Content Domain	Question Text	Question Database Id.
Culture and Values	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?	35
	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?	150
	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?	58
	Are there security threats that political leadership does not comprehend?	7
	Must a strategist have understanding of foreign cultures, language, politics, and history?	333.02

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

Two imperatives dominate the content domains of the most important competencies of master strategists. First, the patterns and themes that run through the content domains hearken back to the continuing importance of developing master strategists. Second, the professional education framework covers a wide range of requirements with a need for depth of understanding. The following section is an analysis of the validity and reliability of the four content domains.

Alternative Explanations

The analysis plan stipulated that patterns be compared to alternative, plausible explanations in order to gauge validity and reliability (Marshall & Rossman, 1995). Content domains emerged from a data set that framed panel member core interests across the three Delphi Rounds. Furthermore, by definition, the content domains formed the dominant construct for a professional education framework and, thus, represented the logical point to make comparisons against alternative explanations. The technique to develop alternative explanations involved three instructors in a Joint Professional Military Education (JPME) Program. The three JPME instructors all held advanced degrees and one was a doctoral candidate. One instructor was a Senior Service College graduate and held a strategist skill identifier. Two instructors specialized in military history and one specialized in military tactics.

The instructors sorted the 25 unique questions that were in the list of most frequently asked questions and list of questions that panel members ranked as first or second priority. The sorting instructions stipulated only that the 25 questions be sorted into categories of similar ideas. The three instructors developed alternative

outcomes and each had a different solution that is identified as Alternative 1, Alternative 2, and Alternative 3 in Tables 17 through 20. One instructor's solution consisted of two categories titled Personal Attributes and How the World Changed. Another instructor's solution consisted of three categories titled Advanced Knowledge, Personal Attributes, and Conceptual Skills. A third instructor's solution consisted of four categories titled Professional Needs, International Relations Theory, What If, and Cultural Considerations. As indicated above in Tables 13 through 16, the baseline or primary explanation consisted of four categories titled Personal Attributes, Security Framework, Theory-Based Knowledge, and Culture and Values. The remainder of this section is a discussion to compare and contrast the primary explanation to the three alternative explanations.

Table 17 is a side-by-side lay down of the three alternative explanations for the panel member questions assigned in the personal attributes content domain. In comparing the primary explanation developed in this study to the first alternative explanation no differences exist. In the second alternative, in five questions there is agreement while three questions fall under the heading of advanced knowledge. In the third alternative, in seven items no difference exists while one questions falls under the heading of cultural considerations. Across all items in the personal attributes content domain, a minimum of three explanations place all items in like categories.

TABLE 17. Personal Attributes Comparison of Plausible Alternative Explanations to the Sorting of the Most Frequently Asked Questions and Questions in Rank Order First or Second Joint Professional Military Education Instructor Alternative Explanation of Panel Member Questions Related to the Personal Attributes Content Domain of the Professional Education Framework for a Master Strategist

Question Database Id.	Question Text	Primary	Alternative 1	Alternative 2	Alternative 3
21	Will the master strategist require foresight?	Personal Attributes	Personal	Advanced Knowledge	Professional Needs
57	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?	Personal Attributes	Personal	Advanced Knowledge	Professional Needs
67	Will the master strategist be required to set constructive, realistic objectives?	Personal Attributes	Personal	Personal Attributes	Professional Needs
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?	Personal Attributes	Personal	Personal Attributes	Professional Needs
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?	Personal Attributes	Personal	Personal Attributes	Professional Needs
119	Does the strategist have a vision that drives his/her behavior?	Personal Attributes	Personal	Personal Attributes	Cultural Considerations
140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?	Personal Attributes	Personal	Advanced Knowledge	Professional Needs
222.08	Will the master strategist be better served by a technical rather than a generalist background?	Personal Attributes	Personal	Personal Attributes	Professional Needs

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

Table 18 is a side-by-side lay down of the three alternative explanations for the panel member questions assigned in the security framework content domain. In

comparing the primary explanation developed in this study to the three alternative explanations, no exact likenesses exist. In the first alternative explanation, six questions fall in the world changed category. In the second alternative explanation, the conceptual skills and advanced knowledge categories each have three questions while the personal attributes category has one question. In the third alternative explanation, four questions are in the international relations theory category, two are in the what if category, and one is in the professional needs category. In comparing the primary explanation to the three alternatives, no exact conceptual likenesses are apparent. Each approach is a reasonable explanation. In contrasting the primary explanation to the three alternatives one disparity becomes apparent. The three alternative explanations show agreement in assigning the question that concerns the strategic application of military force as an instrument of national security policy to the personal or professional needs category. The difference appears to be a matter of emphasis. The three alternative explanations seem to emphasize the first words of the question dealing with what a strategist must know. The primary explanation emphasizes the last words of the question dealing with military force as an instrument of national policy.

TABLE 18. Security Framework Comparison of Plausible Alternative Explanations to the Sorting of the Most Frequently Asked Questions and Questions in Rank Order First or Second Joint Professional Military Education Instructor Alternative Explanation of Panel Member Questions Related to the Security Framework Content Domain of the Professional Education Framework for a Master Strategist

Question Database Id.	Text	Primary	Alternative 1	Alternative 2	Alternative 3
2	Is the nation-state still the primary actor in international relations?	Security Framework	World Changed	Conceptual Skills	International Relations Theory
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings – military and political – changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?	Security Framework	World Changed	Advanced Knowledge	International Relations Theory
17	Is the nation-state model still valid for understanding international relations?	Security Framework	World Changed	Conceptual Skills	International Relations Theory
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly – advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022??	Security Framework	World Changed	Advanced Knowledge	What If
43	Were there substantial changes to the political philosophies, institutions, and processes within the US – changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision making?	Security Framework	World Changed	Advanced Knowledge	International Relations Theory
127	Are there new means of conflict resolution?	Security Framework	World Changed	Conceptual Skills	What If

TABLE 18. Continued

Question Database Id.	Text	Primary	Alternative 1	Alternative 2	Alternative 3
333.06	What must a strategist know about the strategic application of military force as an instrument of national security policy?	Security Framework	Personal	Personal Attributes	Professional Needs

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

Table 19 is a side-by-side lay down of the three alternative explanations for the panel member questions assigned in theory-based knowledge content domain. In comparing the primary explanation developed in this study to the three alternatives, similarities exist for the question dealing with the strategist having a working knowledge of environmental or economic models and for the question dealing with the strategist having a basic understanding of major theories, models, and histories of conflict. In contrasting the primary explanation to the three alternatives, two differences are apparent. Each of the three alternative explanations classified as personal or professional needs the questions dealing with strategists having a comprehensive mastery of classical strategic theory and a master strategist having a grasp of economic systems. Again, the root difference appears to be a matter of where to place emphasis. The three alternative explanations emphasize the opening words of the sentence dealing with the strategist. The primary explanation draws attention to the closing words that deal with mastery of theory and systems.

TABLE 19. Theory-Based Knowledge Comparison of Plausible Alternative Explanations to the Sorting of the Most Frequently Asked Questions and Questions in Rank Order First or Second Joint Professional Military Education Instructor Alternative Explanation of the Theory-Based Knowledge Content Domain of the Professional Education Framework for a Master Strategist

Question Database Id.	Text	Primary	Alternative 1	Alternative 2	Alternative 3
16	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?	Theory-Based Knowledge	Personal	Personal Attributes	Professional Needs
68	Are there entirely new domains of knowledge?	Theory-Based Knowledge	World Changed	Conceptual Skills	What If
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health – changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?	Theory-Based Knowledge	World Changed	Advanced Knowledge	International Relations Theory
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement – conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?	Theory-Based Knowledge	World Changed	Advanced Knowledge	International Relations Theory
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?	Theory-Based Knowledge	Personal	Personal Attributes	Professional Needs

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

Table 20 is a side-by-side lay down of the three alternative explanations for the panel member questions assigned in the culture and values content domain. In comparing the primary explanation developed in this study to the three alternatives, the third alternative explanation has identical categories in three questions. In alternative one, the same category title applies to four questions to indicate similarity among the questions. A like situation exists in alternative two with three questions in the same category. In contrasting the primary explanation to the three alternatives, one difference is apparent. The three alternative explanations assign the question dealing with a strategist having an understanding of foreign cultures, language, politics, and history to the personal or professional needs category. As in the previous like instances, the difference seems to be a matter of where to place emphasis. The alternative explanations appear to emphasize the opening words dealing with the strategist having understanding while the primary explanation focuses on the closing words that deal with culture and language.

TABLE 20. Culture and Values Comparison of Plausible Alternative Explanations to the Sorting of the Most Frequently Asked Questions and Questions in Rank Order First or Second Joint Professional Military Education Instructor Alternative Explanation of Panel Member Questions Related to the Culture and Values Content Domain of the Professional Education Framework for a Master Strategist

Question Database Id.	Text	Primary	Alternative 1	Alternative 2	Alternative 3
7	Are there security threats that political leadership does not comprehend?	Culture and Values	World Changed	Advanced Knowledge	What If

TABLE 20. Continued

Question Database Id.	Text	Primary	Alternative 1	Alternative 2	Alternative 3
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?	Culture and Values	World Changed	Advanced Knowledge	Cultural Considerations
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?	Culture and Values	World Changed	Advanced Knowledge	Cultural Considerations
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?	Culture and Values	World Changed	Conceptual Skills	Cultural Considerations
333.02	Must a strategist have understanding of foreign cultures, language, politics, and history?	Culture and Values	Personal	Personal Attributes	Professional Needs

Note: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.

In sum, the personal attributes content domain has the highest level of agreement across the four explanations. Also, the primary explanation developed in this study and alternative explanation three show wide agreement in culture and values content domains. On a conceptual level, the primary explanation and alternative explanation three have a good likeness in views of the security framework content domain and, to a slightly lesser extent, of the theory-based knowledge content domain. The three alternative explanations, therefore, tilt more toward support to the primary explana-

tion. Thus, by extension, results from the consideration of alternative explanations for content domains extend credence to the remaining subordinate components of the professional education framework.

Summary Research Question One

In summary, the four content domains of the most important competencies are personal attributes, security framework, theory-based knowledge, and culture and values (Table 21). The personal attributes content domain highlights strategic leader and theoretician qualities (Chilcoat, 1995) to communicate in face-to-face discussions as well as through coherent plans. The security framework content domain draws from the strategic leader and practitioner roles (Chilcoat, 1995). The security framework domain deals with the importance of master strategists having a broad base of understanding that encompasses political-military issues as well as domestic and international security relationships. The theory-based knowledge content domain speaks directly to the role of a strategic theoretician (Chilcoat, 1995). Theory-based knowledge encompasses modern disciplines such as political science, economics, agriculture, the environment, military science, social science as well as classical strategic theories. The culture and values content domain attracts attention to the impact that regional and national social issues as well as values and moral beliefs exert on security strategy.

TABLE 21. Summary of Panel Member Discussions Concerning Patterns and Themes and Patterns of Professional Education Content Domains, Unifying Themes in Literature and Meaning for a Response to Research Question One

Research Question One Discussions	Patterns and Themes from the Discussion	Unifying Themes in Literature	Meaning for Question One
First Panel Member Discussion concerning themes and patterns of professional development content domains.	- Leader attributes of interpersonal exchanges, unifying allies, influencing opponents and visioning. - Planning attributes of foresight, setting objectives and developing plans. - Analysis attributes dealing with gauging political conditions, understanding issues that unite and separate allies.	- Strength of character to influence thinking (Metz, 1995). - Attributes of a strategic leader, strategic theoretician and strategic practitioner (Chilcoat, 1995). Master strategist as a unique individual having attributes to influence the strategic environment through effective insight, communication, plans and influence.	The content domain described in the first panel member discussion deals with master strategist personal attributes.
Second Panel Member Discussion concerning themes and patterns of professional development content domains.	- Actor focus concerning primacy of nation states as an organizing construct to understand the world and develop strategy in contrast to emergent non-traditional actors of the current security environment. - Tools focus to the means of strategy such as economic or military capabilities and new technologies. - Futuristic focus on development of new methods to resolve conflict that impact the use of military force as an instrument of national policy and integration of domestic political priorities into security policy.	- Strategists must balance contending needs of the domestic environment with protecting national interests (Downey & Metz, 1988). - Master strategists must develop security strategies without an absolute model. The security environment presents traditional nation-state actors as well as non-traditional actors such as terrorists and failed states (National Security Strategy, 2002).	The content domain described in the second panel member discussion deals with the security framework.
Third Panel Member Discussion concerning themes and patterns of professional development content domains.	- Intellectual focus on knowledge as a domain consisting of new knowledge and grounding in classical strategic theory. - Understanding major theories, models and histories of conflict in the application of military power, economic assistance or political involvement. - Understanding American as well as international environmental and economic models in order to develop feasible strategic options.	- Classical strategist descriptions centered on the intertwined character of political, economic and military affairs (Cummings, 1995). - Master strategists have intellectual capacities to integrate histories of warfare, strategic concepts and theories with components of national power (Chilcoat, 1995).	The content domain described in the third panel member discussion deals with theory-based knowledge.
Fourth Panel Member Discussion concerning themes and patterns of professional development content domains.	- Influence of Judeo-Christian ethics and values on international law. - Influence of continuing growth of Islamic extremism. - Influence that culture and values have on understanding security threats as well as on policy development.	- Master strategists understand regional and national social issues (National Security Strategy, 2002). - Master strategists operate simultaneously in disparate domains that include values and moral beliefs (Cheetham & Chivers, 1996).	The content domain described in the fourth panel member discussion deals with culture and values.

Independent judgments from literature and from the alternative explanations lend support to the four content domains as a foundation for identifying a professional education framework for master strategists. As discussed above, scholarly literature on master strategist history (Chen, 1994; Cummings, 1995; Rarick, 1996) and development (Chilcoat, 1995; Metz, 1991) lend support to the four content domains described in this study. Given the condition that guided development of the three alternative explanations, the degree of similarities is sufficient to place confidence in the content domains of personal attributes, theory-based knowledge, security framework, and culture and values. The following section deals with research question two. The response to research question two is based on panel member statements of rationale that described how their questions inform development of a professional education program for master strategists.

Research Question Two

The second research question was, "How do questions to identify the most important competencies inform development of a professional education program for master strategists as perceived by qualified professional strategists?" The second data line, panel member statements of rationale for questions in Round Three, provided the foundation for developing a response to research question two. This section has three major headings. The first section deals with building the data set into a sturdy framework of competency patterns and themes. The second section carries forward the framework of patterns and themes to identify panel member perceptions of

professional education for master strategists. The third section is a summary of the analysis of data related to research question two.

Establishing a Framework of Patterns and Themes

This section is a discussion of panel members' rationale on how their questions in Round Three inform development of a professional education program, the second data line. The purpose was to develop a response to research question two. The 57 statements of rationale on how questions inform development of a professional education program were used in developing a response to research question two (Tables 22-26). One panel member opted out of providing rationale for questions in Round Three. The patterns and themes provided a bridge connecting content domains developed in research question one to the development of a master strategist professional education framework.

Patterns and themes embedded in statements of rationale describe the vision panel members had for master strategist competencies. The approach to identify the patterns and themes embedded in panel member statements of rationale involved the same five-step process used in research question one—a series of discussions to let the data reveal its meaning. The aim was to listen to panel members explain their most important questions—to let the panel of experts publish their deep thinking in a series of discussions. In the end, panel members clarified the education requirements or conditions necessary to identify the most important competencies for a master strategist in national security.

In one discussion, panel members described professional education through 11 statements of rationale that highlighted three interrelated components—to visualize, portray, and influence (Table 22). One panel member emphasized that vision drives behavior and that strategy is simply the plan to achieve the vision. The visualize component dealt with qualities to anticipate likely futures, develop a vision to orient behavior, and to fathom balance between ends to means. The controlling idea was holistic thinking to capsulate one's own as well as the opponent's situation. A holistic visualization was framed as the antithesis of linear thinking because, as one panelist noted, master strategists should see a range of plausible futures.

TABLE 22. Panel Member Statements of Rationale Related to a First Discussion of Research Question Two Patterns and Themes and Patterns Framing Components of the Mental Construct for a Master Strategist

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Visualize	To decide where he wants to end up, the strategist must develop the knack of anticipating likely futures. This is necessary to determine what forces are will help achieve his objectives and what forces must be overcome. Read Mao's "Problems of Strategy in China's Revolutionary War" (1936) and "On Protracted War" (1938) for good examples of how to do it.	2	21
	Strategists must balance determination to achieve ends with willingness to be flexible as regard to means. Track Hitler's diplomacy from 1933-1938 for a very fine example of this skill in pursuit of heinous goals.	5	112
	Vision drives behavior. The strategy is simply the plan to achieve the vision.	1	119

TABLE 22. Continued

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Portray	Strategy starts by deciding where you want to end up and whether you can end up there. We must, through positive and negative example educate our future strategists in the art of setting objectives.	1	67
	Plans must be developed for a strategy to work.	3	97
	Plans are the guts of strategy. Strategists must develop a sixth sense for determining which ones will work and which ones won't. See Lincoln in 1864-65 for this.	4	97
Influence	Interpersonal skills, e.g., the ability to formulate a vision, negotiate, build consensus, to interact with partners, allies, and even adversaries are likely to remain a critical competency of the strategic practitioner.	2	109
	Shapes the extent to which interpersonal communications skills should still be an integral part of the curriculum.	2	109
	Direct interpersonal communication is critical to all aspects of strategy.	5	109
	In order to execute a strategy, a leader must develop cooperation and address problems.	4	140
	This is basic to strategy – don't fight out-numbered. If this had been taught to Don Rumsfeld early on in life, I'd feel much more comfortable about the Global War on Terror (GWOT).	6	140

Note: Questions with Database Id. 1-199 are Round One Responses.

The portray component dealt with the heart of strategy to develop effective plans. The controlling idea centered on the need to understand the art of planning and setting objectives. One panelist showed the integrated nature of the three components by stating that strategy starts with deciding where you want to end up and if that end state is possible. Another panel member emphasized the need for master strategists to

develop a sixth sense to recognize differences between unworkable and workable plans.

The influence component dealt with interpersonal communications and cooperation development. The controlling idea focused on dominating situations as a consensus builder with compelling clarity of thought. One panelist reinforced the integrated nature of the three components by framing boundaries for the influence component that consisted of vision formulation, consensus building, and interactions with partners, allies, and adversaries. Along the same line of thought, another panel member admonished that interpersonal communication is critical to all aspects of strategy.

In a second discussion, panel members described professional military education through sixteen statements of rationale that highlighted a second set of three interrelated components—cognitive reasoning in depth, temporal perspective, and breadth of understanding (Table 23). The reasoning component dealt with two overarching domains of generating knowledge and gleaning situational understanding. In regards to generating knowledge, a panelist believed that master strategists must be able to do analysis and exercise insight in strategy development. In the second domain of gleaning situational understanding, a panelist highlighted the need for master strategists to recognize shades of meaning in commonly used terms and to then address the associated issues in a thoughtful manner. The controlling idea in cognitive reasoning in depth focused on understanding implicit variables that give form to strategy.

TABLE 23. Panel Member Statements of Rationale Related to a Second Discussion of Research Question Two Patterns and Themes and Patterns Framing Components of Cognitive Abilities for a Master Strategist

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Cognitive Reasoning in Depth	Analytic and unconventional perspectives for political leadership that thinks short-term. [Note: This rationale refers to the question "Are there security threats that political leadership does not comprehend"?]	none	7
	Strategists must know their tool boxes. Roosevelt's instructions to Stimson a month after Pearl Harbor to produce 60,000 aircraft in 1942 and 125,000 in 1943 is a good example of a strategist's recognizing a material deficiency and doing something to correct it.	3	82
	Changes in technology undoubtedly will affect the means available to the strategist. Dramatically different means will require strategists to understand these new means and perhaps struggle with how best to apply them to achieve national ends.	6	86
	The term "terrorism" is grossly overused. Strategists need to recognize its many shades of meaning and develop an ability to address them in a measured, thoughtful manner.	3	333.01
Temporal Perspective	Answer would help design a course of instruction for a master strategist. [Note: This rationale refers to the question "Are there entirely new domains of knowledge?]	3	68
	What we don't know today may be key to the development of strategy in the future. for example, nuclear weapons have dominated strategy for half a century, yet were unknown two decades before they began to play a central role.	3	68
	If threats are long-term, what is the degree of sacrifice that is tolerable--i.e., realistic strategy.	none	87
	The principal tool in the strategist's toolkit. [Note: This rationale refers to the question "Are there new means of conflict resolution"?]	2	127
	Answer would aid strategist in devising ends, ways, and means. [Note: This rationale refers to the question "Are there new means of conflict resolution?]	4	127
	Would help course designers in identifying how/if the grammar of war has changed. [Note: This rationale refers to the question "Will the master strategist need command experience?]	5	222.09

TABLE 23. Continued

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Breadth of Understanding	Would help determine how much emphasis in curriculum on traditional use of force issues vice other areas.	4	18
	This question captures educational requirements in the fields of strategic and/or revolutionary technologies that can alter global activity, relationships and capabilities.	1	27
	National security strategy/structures are being redefined--basic starting point for any serious analysis of when and how to use force.	none	50
	This question captures the potential requirements and emphasis on major environmental and health competencies the student must have in order to conceptualize and analyze issues that affect strategic policies and decision making.	2	73
	This question captures the educational requirements of strategists on economic modeling and theories and how they apply to real-world political relationships.	4	132
	Hopefully, upon reflection a strategist will recognize the pitfalls that accompany a lack of sufficient proficiency in these areas.	2	333.02

Note 1: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.
Note 2: Panel member statements of rationale are thoughts about a Round Three question, and are in some instances phrased as "thoughts" rather than as a complete sentence.

In continuing the second discussion, panel members discussed temporal perspective in terms of epochal events such as revolutionary discovery in the field of weapons or other means of conflict resolution. Likewise, there were references to ages of progress when panel members discussed technology advances and transition to new ways of developing knowledge like Toffler (1980) described in the shift from agrarian societies to the industrial age. The temporal perspective component called for master strategists to mentally conceive time as epochs and ages, defined as shifts in development punctuated by events and prominent periods in progress, respectively

(Mish, 1995). One panelist observed that what we do not know may be key to a future strategy. The pattern and theme centered on a temporal perspective to connect past, present, and future in ways to overcome the loss of momentum or continuity during times of discovery and transition involving new ways of knowing, developing strategy, or understanding human behavior.

In concluding the second discussion, the breadth of understanding component dealt with the need to conceptualize meaningful relationships between factors that combine to influence strategy requirements. The breadth of understanding component incorporated domains that ranged from military force to academic disciplines to geographic based influences. Panel members discussed breadth in terms of balancing traditional force with other means of national power. The discussion touched on understanding cause and effect relationships such as the impact technology developments in one area of the world may cause in a distant region. Panel members discussed breadth as an affective relationship between economic models, environmental concerns, health issues, and strategic policies. In a geographic domain, panelists drew attention to making connections between conflict theories with regionally based histories, cultures, languages, and politics. The controlling idea concerned a breadth of understanding to appreciate that seemingly unrelated concepts in fact share a reciprocal relationship.

In a third discussion, panel members described professional military education through 12 statements of rationale from a perspective that Forrester (1968) characterized as feedback loops. Positive feedback loops channel information to reinforce current practices while negative feedback loops channel information that

concerns consequences of failing to meet expectations (Forrester, 1968). Panel members framed a continuation of nation states as primary actors in the security environment as positive feedback loops. On the other hand, panel members framed emergent non-traditional influences on strategy as negative feedback loops (Table 24). For example, one panel member emphasized that a change in the status of nation states affects how master strategists practice their art. Another panelist observed that a change to the role of nation states as the primary actors determines the emphasis given to current international relations theories. Panel members underlined feedback loops dedicated to civilization cultures and national values such as the rule of law. A significant portion of the discussion dealt with an overarching influence that feedback loops exert on security relationships. Panelists punctuated the necessity of understanding feedback loops in rationale that focused on melding all instruments of national power in security strategies, understanding the full range of power dynamics in the global system, the United States political system, and framing the world as a small place. In the same line of thinking, one panel member framed the feedback issue around the concept of inter-service and inter-agency relationships. The controlling idea concerned the leading role systems thinking plays in establishing conditions that enable development of sound security strategies and policies.

TABLE 24. Panel Member Statements of Rationale Related to a Third Discussion of Research Question Two Patterns and Themes and Patterns Framing the Component of Interconnectivity or Feedback Loops in the Security Environment

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Interconnectivity or Feedback Loops in the Security Environment	Since 1648 and the Treaty of Westphalia, the nation-state has been the principal actor on the strategic stage. Any change in that status will undoubtedly affect how master strategists practice their art.	1	2
	Helps determine relative emphasis given to classical state-to-state relations vice other actors and IR theories.	1	2
	A fundamentally important assumption about strategy today is the primacy of the nation state in international issues. That assumption may be vulnerable as non-state entities (corporations, terrorist groups, and others) grow in power and authority that does not coincide with the interests of nation states.	1	17
	Would influence how much interagency and inter service emphasis the curriculum would need.	5	123
	The world is a small place - this isn't new - and a leader must understand it.	2	131
	If U.S. is trying to spread "rule of law," what values does this comprise?	none	150
	Provides input as to the continuing structure of the global system (do states still primary players; is there an international order).	1	150
	With decreasing military experience in political leadership, this is indispensable.	none	222.18
	Would help understand how military power has/has not changed.	5	222.18
	Some of the many pitfalls of unilateral action are becoming readily apparent today. The question is, what are the alternatives and how important are they given a wide variety of alternative circumstances?	5	333.03
	Provides input into the power dynamics of the global system.	3	333.04
	Strategists need to come to grips with the limitations as well as the utility of military force as an instrument of national security policy, and to address the melding of these different instruments.	1	333.06

Note 1: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.
Note 2: Panel member statements of rationale are thoughts about a Round Three question, and are in some instances phrased as “thoughts” rather than as a complete sentence.

In a fourth discussion, panel members described professional military education through 10 statements of rationale that stressed cultural, societal, and religious norms (Table 25). Panel members noted that understanding the principal threat is necessary

TABLE 25. Panel Member Statements of Rationale Related to a Fourth Discussion of Research Question Two Patterns and Themes and Patterns Framing Components of Relationships between and among Cultural, Societal, and Religious Norms That Define Effective Strategies

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Cultural, Societal and Religious Norms that Define Effective Strategies	Understanding of the principal threat facing U.S. [Note: This statement of rationale refers to the question "Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?]	NONE	35
	Provides input as to the construction and dynamics of conflict. [Note: This statement of rationale refers to the question "Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?]	2	35
	There is a "clash." However, strategists need to parse the underlying reasons for this clash of civilizations if they are to develop effective policy recommendations.	6	35
	The strategist must work not only in international environments but also within the norms of his nation.	5	43
	Different perspectives are critical to developing a successful strategy.	6	44
	This question captures the potential requirements and emphasis on conflict theory and geographically-focused history and culture information the strategist must know.	3	88
	Understanding these norms is fundamental to the development of a successful strategy. These are the ABCs of a strategist's knowledge base. [Note: This rationale refers to the question "Were there shifts in religious, ethnic or societal norms, either domestically or internationally – shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making"?]	4	58
	This question will identify any requirements for an educational foundation in religious, ethnic, and societal norms as they apply to security and regional and global strategic issues.	5	58

TABLE 25. Continued

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Cultural, Societal and Religious Norms that Define Effective Strategies	To be effective, strategists must understand not only their own society, culture, and how those affect national interests, policies, and strategy, but also how those same issues affect their interlocutors. Strategy is not a one-sided contest. The other side (or sides) gets a vote, and the practice of strategy is an interactive process among thinking, adaptive individuals, organizations, and states. If one presumes that within increasing globalization, dealing with multiple cultures or at least cultures that are different from one's own, then cross-cultural savvy (or the lack thereof) may have a considerable affect on the effectiveness of the master strategist.	5	77
	Western legal norms are being challenged and strategists need to grapple with the importance as well as the means for crafting wider national acceptance of internationally accepted rules of law.	4	333.05

Note 1: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.
Note 2: Panel member statements of rationale are thoughts about a Round Three question, and are in some instances phrased as “thoughts” rather than as a complete sentence.

to understand the dynamics of conflict. Another panelist emphasized that when different belief systems are engaged in conflict, the master strategist must understand the underlying reasons in order to develop effective strategies. Panelists drove hard the point that master strategists must understand the shared relationship cultural and societal norms have with national interests. For example, one panelist stated that in order to be effective, master strategists must understand not only how their own society and culture affect strategy, but how those same issues affect their opponents because strategy is not a one sided contest. Another panelist expressed interest in the potential requirements for master strategists to understand conflict theory and

geographically focused history and culture. The recurrent theme was that national or cultural norms constitute a dominant influence on strategy. Master strategists, therefore, must have a solid grasp of different cultures in order to be effective. The controlling idea dealt with situations in which a master strategist must comprehend behavior in international relations from a point of view that incorporates cultural, societal, and religious norms as important variables.

In a fifth and final discussion, panel members discussed professional military education through eight statements of rationale framing future research requirements (Table 26).

TABLE 26. Panel Member Statements of Rationale Related to a Fifth Discussion of Research Question Two Patterns and Themes and Patterns Framing the Component of Future Research Requirements for Knowledge That Is Required but Unknown

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Future Research Requirements for Knowledge that is Required But Unknown	This question identifies any educational requirements on international treaties and agreements and organizations that are factors in world politics	5	11
	Would help course designers understand how much of a theoretical base is necessary for a successful master strategist. [Note: This statement of rationale refers to the question "Will future strategists of 2022 require a comprehensive mastery of classical strategic theory"?]	1	16

TABLE 26. Continued

Component of Themes and Patterns Analysis	Panel Member Statements of Rationale	Panel Member Designated Priority Rank	Question Database Id.
Future Research Requirements for Knowledge that is Required But Unknown	This question focuses on the education of the master strategist. What are the basic underpinnings of strategic theory and art that the future strategist must master. This question assists in determining the extent of the knowledge that the strategist must master, as well as how to use that contextual information to shape future strategy. The answer to this question will shape the aspects of strategic theory that the strategist must grasp, as well as drive how future master strategists might apply this information.	4	16
	This question addresses the key issue: at what levels of policy or warfare do individuals begin to practice the strategic art. Current trends indicate that, while there have always been strategic consequences for tactical and operational level decisions, the time period between cause and effect is being reduced. By understanding when and under what circumstances strategists must practice their craft, one can determine when education in these competencies needs to occur.	3	47
	Helps determine whether nuclear issues should be a separate part of curriculum.	6	61
	The future techniques and standards will drive the education of a strategist and the curriculum that supports it. [Note: This statement of rationale refers to the question "Were there substantial changes in the techniques and standards that influence national and international negotiations and dialogue - changes that suggest the master strategist must possess a wealth of cognitive skills to include analysis, patter recognition, synthesis, role-playing, negotiation strategy, and human interaction?]	6	145
	Knowing whether technical or general knowledge is more important would help us design a course for strategists.	2	222.08
	Would have profound effect on US domestic/public climate and thinking, therefore shaping part of curriculum. [Note: This statement of rationale refers to the question "Did terrorists use WMD successfully against the US and its allies?]	3	222.11

Note 1: Questions with Database Id. 1-199 are Round One Responses; Questions with Database Id. 222 are New Round Two Responses; Questions with Database Id. 333 are New Round Three Responses.
Note 2: Panel member statements of rationale are thoughts about a Round Three question, and are in some instances phrased as "thoughts" rather than as a complete sentence.

Panel members pondered educational requirements in domains that included international treaties and agreements as well as the actors and structures that make up the strategic framework. One panel member drew attention to knowing what theory base is necessary for a master strategist. In a related concern, another panelist pointed attention to identifying the basic foundation of strategic theory that a master strategist needs to know as well as how future strategists will apply strategic theory. Another panelist focused on the need to know more about a boundary separating operational and strategic art. Throughout the discussion, panel members expressed interest in the theoretical foundation that supports development of master strategists. The frames of reference regarding the theory foundation ranged from content of the theory base to specific examples relating to strategic theory and art to non specific terms of technical or general knowledge. Still another set of needs focused on curriculum content in terms of proliferation and use of nuclear and other weapons of mass destruction. The controlling idea formed on the notion that professional military education for master strategists is inextricably linked to a robust theoretical foundation and that foundation needs to be better defined.

In summary, the purpose of having five discussions based on statements of rationale for asking questions was to develop understanding of areas that panel members viewed as critical to a professional education framework for master strategists. The key task was to identify prevailing patterns and themes in order to demonstrate relationships between the statements of rationale for further analysis. In the end, the discussions served to frame panel member perceptions of how competencies inform development of a professional education program for master

strategists. The outcomes of the five discussions forward to support development of a response to Research Question Two are shown in the next session.

Identifying Perceptions of Professional Military Education for Master Strategists

The five panel member discussions highlighted patterns and themes embedded in statements of rationale for asking questions in Delphi Round Three. The purpose of this section was to draw out from patterns and themes the contributions that the most important competencies must make to development of a professional military education program for master strategists. This section follows a two-step format. The first step was to place patterns and themes from the five panel member discussions on the theory foundation established in the review of literature. The second step was an analytic extension to identify the meaning that rationale patterns and themes impart as a response to Research Question Two. Table 27 is an overview of panel member discussions concerning Research Question Two, emergent patterns and themes, links to literature, and the contributions to a professional education that competencies must establish.

TABLE 27. Summary of Research Question Two Panel Member Discussion Concerning Patterns and Themes and Links to Unifying Themes in Literature That Combine to Inform Development of a Professional Education Program for Master Strategists: A Response to Research Question Two

Research Question Two Discussions	Patterns and Themes from Panel Member Discussion	Links to Unifying Themes in Literature	Attributes Competencies Must Establish—Response to Research Question Two
Perceptions from Panel Member Discussion One	- Visualize the future to orient behavior and to balance ends to means. - Portray strategy through planning and setting objectives. - Influence through interpersonal communications to dominate situations as a consensus builder with compelling clarity of thought.	- Holistic thinking visualize, describe, and portray strategy emphasizes holistic thinking with multiple dimensions working together (Sternberg, 1996). - Strategy is a product of interactions among various actors over time (Jarzabkowski, 2003). - Strategy is a cognitive competition between actors in a given environment (Sanchez & Heene, 1997b).	- Enable multidimensional, holistic thinking. - Enable visualizing and portraying the future to orient organizational performance and human behavior. - Enable thinking that influences performance of people and organizations.
Perceptions from Panel Member Discussion Two	- Cognitive reasoning in depth to generate new knowledge and glean situational understanding as a unified whole - Temporal perspective to see time in terms of epochs and ages - Breadth of understanding to observe relationships among seemingly unrelated concepts	- Meta-cognition is self-regulation to focus on acquiring knowledge (Sternberg, 1997). - Temporal perspective is a sense of time independent of compartments or strictures of past, present, or future (Jarzabkowski, 2003; Sternberg, 1997). - The strategic setting is a complex web that is best understood as patterns rather than sets of predictive relationships (Sanchez & Heene, 1997b).	- Lead to a set of meta-competencies, in order to allow critical self-regulation leading to new knowledge and situational understanding. - Establish a higher order, integrated temporal perspective that orients performance across time expanses such as epochs and ages. - Bring breadth of understanding of relationships conventional thinking views as non-existent.

TABLE 27. Continued

Research Question Two Discussions	Patterns and Themes from Panel Member Discussion	Links to Unifying Themes in Literature	Attributes Competencies Must Establish—Response to Research Question Two
Perceptions from Panel Member Discussion Three	- Interconnections between traditional and non-traditional actors in the security environment - Interconnections between culture systems - Interconnections between power centers	- Feedback loops are the bridge to problem solving and performance gains (Sternberg, 1997). - Organizations are evolving, collective interactive systems, and feedback is cross fertilization of different perspectives (Engström, 2000). - Organizations are open systems in an interactive environment of positive and negative feedback loops (Moorecroft et al., 2002).	- Enable mental maps to conceptualize feedback loops, mutual dependence between systems and integration of various means as a dynamic entity. - Generate new competencies. - Generate a sense of organization for the arrangement of actors, policies, or strategies in purposeful ways to improve conditions.
Perceptions from Panel Member Discussion Four	- Intricate values-based relationships that define effective strategies. - Paradoxical affects cultural and religious norms exert on effective strategies	- Cognitive activity extracts from concrete experiences abstracts that anticipate future sequences in other goal-directed situations (Bedny et al., 2000). - Strategy reflects an operating environment of interrelated causal effects in a complex network that defies prediction (Sanchez & Heene, 1997b).	- Sustain goal-directed performance from positive and negative feedback loops. - Bring depth of understanding for languages and culture-based truths to enable effective alliances, coalitions, and strategies. - Instill a sense of personal values to allow strategies focused on making situations better.
Perceptions from Panel Member Discussion Five	- Condition of not knowing what we do not know - Unknown qualities of the strategic environment - Professional education theory base and the notion of strategic art	- Act of recognizing incomplete knowledge is a quality of highly qualified researchers (Tukey, 1962). - Self-awareness and situational understanding emerge from meta-cognitive processes (Bedney et al., 2000; Sternberg, 1997). - Competitive advantage through learning (Sanchez & Heene, 1997b).	- Support growth of questions that emerge as new knowledge. - Support intellectual activity to develop theories that explain unknowns. - Enable master strategists to connect theoretical knowledge to practice.

Perceptions from Discussion One

In review, the first panel member discussion of rationale highlighted three interrelated components—to visualize, portray, and influence. Panel members framed the visualize component in terms of orienting behavior and to balancing ends to means. The portray component focused on planning and setting objectives. The influence component focused on interpersonal communications to dominate situations. Taken in context, the first panel member discussion emphasized holistic thinking that employed visualizing, portraying, and influencing to understand all sides of an issue or situation (Table 27).

In the theory foundation, a multidimensional mental construct gained credibility late in the twentieth century (Anderson, 1975). Panel members adopted a perspective that followed Sternberg's (1997) triarchic theory of intelligence with emphasis that all dimensions must work together as an orchestrated whole. According to activity theory, a multidimensional perspective is a single construct connecting mental activity, situational awareness, and understanding others' mental processes (Bedny et al., 2000). Likewise, the controlling idea that a master strategist dominates situations as a consensus builder with compelling clarity of thought followed an activity theory concept that dealt with strategy as a product of interactions among various actors over time (Jarzabkowski, 2003). Competency theory framed activities aimed at dominating situations as cognitive competition between actors in a given environment (Sanchez & Heene, 1997b).

The first discussion echoed strategic leader and practitioner roles. Strategic leaders provide vision and focus to activities and inspire others to analytical thinking

(Chilcoat, 1995). Strategic practitioners unify all dimensions of national power to meet strategic goals (Chilcoat, 1995). The first discussion took form and substance from the personal attributes content domain that dealt with having a dominant presence—demonstrating effective insight, communication, plans, and influence.

Rationale from the first panel member discussion informed contributions that competencies must offer toward development of a professional education program in three areas (Table 27). First, competencies must be formed around the requirement for multidimensional, holistic thinking to enable understanding situations from the perspectives of allies as well as opponents. Second, competencies must be established to enable visualizing and portraying the future as a way to orient organizational strategy and human performance. Third, competencies must be identified that support efforts to influence the thinking and performance of people and organizations, friends as well as adversaries.

Perceptions from Discussion Two

In review, the second panel member discussion highlighted a second set of three interrelated components—cognitive reasoning in depth, temporal perspective, and breadth of understanding (Table 27). Panel members framed cognitive reasoning in depth to incorporate generating new knowledge and gleaning situational understanding as a unified whole. Panel members framed temporal perspective as seeing time in terms of epochs and ages; to have a higher order view of time as a factor in planning and strategy development. Panel members framed breadth of

cognitive understanding as the ability to observe relationships among seemingly unrelated concepts.

In the theory foundation, triarchic theory described reasoning in depth as meta-cognition to deal with self-regulation to focus on knowledge acquisition activities (Sternberg, 1997). Similarly, activity theory described reasoning in depth as an inner cognitive, analysis framework that collapses boundaries separating micro from macro, mental from material, and observations from practices (Engström, 2000). Competency theory captured reasoning in depth as an appreciation for developing new knowledge as a strategic asset (Sanchez & Heene, 1997b).

In regard to temporal perspective, triarchic theory described the importance of a higher order sense of time to discard accepted practice or engage novel ideas at the opportune moment; a sense of time perception larger than common descriptions constrained by notions of past, present, or future (Sternberg, 1997). Activity theory described time nested in cultural ages and epochs; a sense of time that is of a higher order than a compartmentalized present, past, and future (Jarzabkowski, 2003).

In regard to breadth of cognitive understanding, triarchic theory emphasized the importance of discovering opportunities among anomalies (Sternberg, 1997). Activity theory stressed using apparent contradictions as stepping stones on the way to structural transformation and organizational learning (Engström, 2000). Competency theory captured the same concept in terms of a strategic setting that is a complex web of actors, organizations, and events that must be understood as patterns rather than as a predictive set of relationships (Sanchez & Heene, 1997b).

The second discussion echoed the strategic theoretician role that emphasizes developing new strategic concepts and theories (Chilcoat, 1995). The second discussion emerged from the theory-based knowledge content domain that ranged from classical theories to modern disciplines such as political science, economics, agriculture, military science, and social sciences.

Rationale from the second panel member discussion informed contributions that competencies must offer toward development of a professional education program in three areas (Table 27). First, the second panel member discussion introduced the notion that meta-competencies must be a part of a professional education program. Specifically, meta-cognition is necessary in order to allow critical self-regulation leading to new knowledge and enhanced situational understanding. Second, competencies must establish a higher order concept of time that supports a temporal perspective that orients performance across large time expanses such as exist in ages or epochs. Third, competencies must lead to breadth of understanding sufficient for finding relationships across disciplinary divides; relationships conventional thinking holds to be non-existent.

Perceptions from Discussion Three

In review, the third panel member discussion focused on interconnectivity or feedback loops in the security environment (Table 27). Panel members described interconnections of the international security system between traditional and non-traditional actors, between cultural value systems, and between power centers.

In the theory foundation, triarchic theory was a description of feedback loops in terms of reflecting on inter personal and inter organization links as the bridge to problem solving and performance gains (Sternberg, 1997). Activity theory was a description of organizations as evolving, collective interactive systems and feedback as cross fertilization of different perspectives (Engström, 2000). Competency theory was a view of organizations as evolving, open systems operating within an interactive environment of internal and external feedback loops (Moorecroft et al., 2002; Sanchez & Heene, 1997b). Master strategists must manage their own cognitive activities as well as the mind set of the collective system.

The third discussion echoed the strategic leader role to provide vision and focus and the strategic practitioner role to unify activities through leadership skills (Chilcoat, 1995). The third discussion had foundations in the security framework content domain that stressed master strategists have an understanding of political-military matters as well as domestic and international security relationships.

Rationale from the third panel member discussion informed contributions that competencies must offer toward development of a professional education program in three areas (Table 27). First, competencies must enable mental maps that are non linear and non sequential in order for master strategists to conceptualize feedback loops, mutual dependence between systems, and integration of various means as a dynamic entity. Second, competencies must have a quality to generate new competencies in response to interaction with internal and external feedback loops in order to develop and sustain executive cognitive processes. Third, competencies must generate a sense of organization in order to allow arrangement of actors,

policies, or strategies in purposeful ways that bring improvement over a previous set of conditions.

Perceptions from Discussion Four

In review, the fourth panel member discussion focused on a master strategist mental model to incorporate understanding of the international structural environment as well as national norms in order to develop successful strategies (Table 27). Panelists alluded to the paradoxical affect that cultural, societal, and religious norms exert on effective strategies.

In the theory foundation, triarchic theory is a description of a mental model paradox framed as intelligence that exists independent of psychometric tests; tacit knowledge that exists and improves goal directed performance, but cannot be measured (Sternberg, 1997). Along the same lines of thought, activity theory is an assumption of goal-directed performance and an embracing of symmetrical and asymmetrical relationships in the form of cognitive activity that extracts from concrete experiences relevant abstract concepts that anticipate future sequences in other situations (Bedny et al., 2000). Likewise, competency theory hinges on goal directed strategy that reflects an operating environment of interrelated causal effects that exist in a Web-like configuration; a complex network that denies accurate predictions (Sanchez & Heene, 1997b).

The fourth panel member discussion echoed the strategic leader role to provide a vision to the future as well as to understand and mitigate institutional biases to embrace some approaches, naturally oppose some approaches, and to discount some

information as not relevant (Chilcoat, 1995). The fourth discussion had foundations in the culture and values content domain that emphasized the importance of integrating considerations of ethics, values, and other culture-based truths into the competency framework.

Rationale from the fourth panel member discussion informed contributions that competencies must offer toward development of a professional education program in three areas (Table 27). First, competencies must imbed tacit knowledge to enable cognitive workings that, in concert, sustain goal directed performance from positive feedback and adapt performance as well as goals in response to negative feedback. Second, competencies must bring a depth of understanding for languages, values, norms, and other culture-based truths in order to develop effective alliances, coalitions, and strategies. Third, competencies must instill in the master strategist a sense of personal values that engender professional ethics in order to allow strategies focused on making situations better for all concerned.

Perceptions from Discussion Five

In review, the fifth, and final, panel member discussion focused on master strategist competencies from the perspective of unavailable, but required knowledge (Table 27). Panelists shifted from identifying competencies to concern over a condition best characterized as not knowing what we do not know. Panel members framed the discussion around unknown qualities of the strategic operating environment, the professional education theory base, and the notion of strategic art.

In the theory base, the act of recognizing incomplete knowledge constituted the competency Tukey (1962) attributed to highly qualified researchers. Triarchic theory and activity theory hinge on self awareness and situational understanding that emerge from meta-cognitive processes (Bedny et al., 2000; Sternberg, 1997). Along the same line, activity theory holds that contradictions in cognitive processes lead to new strategic activities or modify and reinterpret existing activities (Jarzabkowski, 2003). Similarly, competency theory proposes that competitive advantage derives from melding master strategists' cognitive abilities for devising new ways of competing with organizational capacities for learning (Sanchez & Heene, 1997b).

The fifth panel member discussion echoed the strategic theoretician role to apply formal as well as tacit knowledge in developing strategies as well as to understand how organizations and individuals improve through learning (Chilcoat, 1995). The fifth discussion had foundations in the theory-based knowledge content domain that stressed the search for understanding from unlikely sources and for relationships among seemingly unrelated concepts.

Rationale from the fifth panel member discussion informed contributions that competencies must offer toward development of a professional education program in three areas (Table 27). First, competencies must enable the development of insightful questions that mature as new knowledge. Second, competencies must support a form of intellectual activity that finds familiar the domain of not knowing what we do not know in order to develop theories that identify and explain unknowns. Third, competencies must enable master strategists to connect theoretical knowledge to

practice. Rationale from the fifth discussion implied that master strategists develop theories in keeping with tenets of basic research as well as applied research.

Summary of Research Question Two Discussions

In each of the five discussions based on statements of rationale, panel members emphasized a series of related attributes that combine to establish a desired end-state or necessary conditions for a professional education framework—in other words, a line of operation. In the first discussion, panel members identified a line of operation that informs an education condition to enable personal attributes for dominating situations. The related attributes necessary for dominating situations concerned multidimensional thinking to gain situational understanding; visualizing the future as a way to orient both organizations and individuals; and influencing the thinking and behavior of people and organizations, friends as well as adversaries.

In the second discussion, panel members identified a line of operation that brings an education condition that enables interrelated components of cognitive reasoning in depth, temporal perspective, and breadth of understanding. The related attributes dealt with meta-cognition for self-regulation leading to new knowledge; temporal perspective to gain understanding from an integrated, higher order view of past, present, and future; and breadth of understanding to find critical across discipline relationships where none appear to exist.

In the third discussion, panel members identified a line of operation that brings an education condition that enables understanding to make effective use of feedback loops or interactive relationships in the security environment. The related attributes

dealt with conceptualizing people and organizations in mutually dependent configurations; generating new knowledge as a derivative from dynamic systems level interactions; and using a sense of organization to arrange actors, policies, and strategies in purposeful ways.

In the fourth discussion, panel members identified a line of operation that brings an education condition that enables a mental outlook to seek understanding about the international structural environment as well as national norms in order to develop effective strategies. The related attributes dealt with sustaining goal directed performance from feedback loops; counter balancing the disparities inherent to culture based truths in order to develop alliances, coalitions and effective strategies; and to keep sacred personal professional values in order to bring improvement for all concerned parties.

In the fifth discussion, panel members identified a line of operation that brings an education condition that enables an indefatigable quest for knowledge in unexplored locales. The related attributes dealt with posing insightful questions that mature as new knowledge; developing theories that identify and explain unknowns; and connecting theoretical knowledge to effective practice in strategy development.

The patterns and themes developed from panel member statements of rationale nested with the theory base developed in Chapter II, descriptions of master strategist roles that Chilcoat (1995) proposed, and with professional education content domains that emerged from research question one. The following section deals with developing a response to research question three.

Research Question Three

The third research question was, "What are the most important competencies of a master strategist as perceived by qualified professional strategists?" The second data line, rationale for how questions inform a professional education framework, and the third data line, a rank order of Round Three questions and rationale, provided the foundation for developing a response to research question three. This section has two major sections. The first section is a discussion of the identification of master strategist competencies framed in the four content domains and panel member perceptions of professional education for master strategists. The second section is a discussion of statistical methods to identify the most important competencies of a master strategist.

Identifying Competencies of a Master Strategist

This section is a discussion of the characteristics of competency content domains (Tables 13-16, 27) and panel member statements of rationale that outline the conditions that competencies must establish in a professional education program for master strategists (Tables 22-26). The aim was to bring forward from Chapter II of this study the competencies best suited to support the conditions of a professional education program for master strategists. The discussion format is first to provide a review of the characteristics of a content domain; second, to discuss panel member statements of rationale or conditions that competencies in each content domain must satisfy; third, to identify competencies for each content domain with a set of attributes that establish necessary educational outcomes or conditions. The resulting

competency framework to inform professional education for master strategists derives from Scholtes' (1999) application of Deming's (1994) theory of the system of profound knowledge.

The personal attributes content domain frames the master strategist profile in terms of influencing allies as well as opponents, developing effective plans, and gauging rightly the political-military environment (Figure 1). Panel members painted the master strategist as a dominant presence across the strategic landscape. In statements of rationale, panel members described conditions in terms of meta-cognition that enables critical self-regulation to develop new knowledge. Competencies must bring an integrated time construct that orients performance across wide expanses of time, such as ages or epochs. Competencies must bring a breadth of understanding that enables identification of relationships across disciplinary divides.

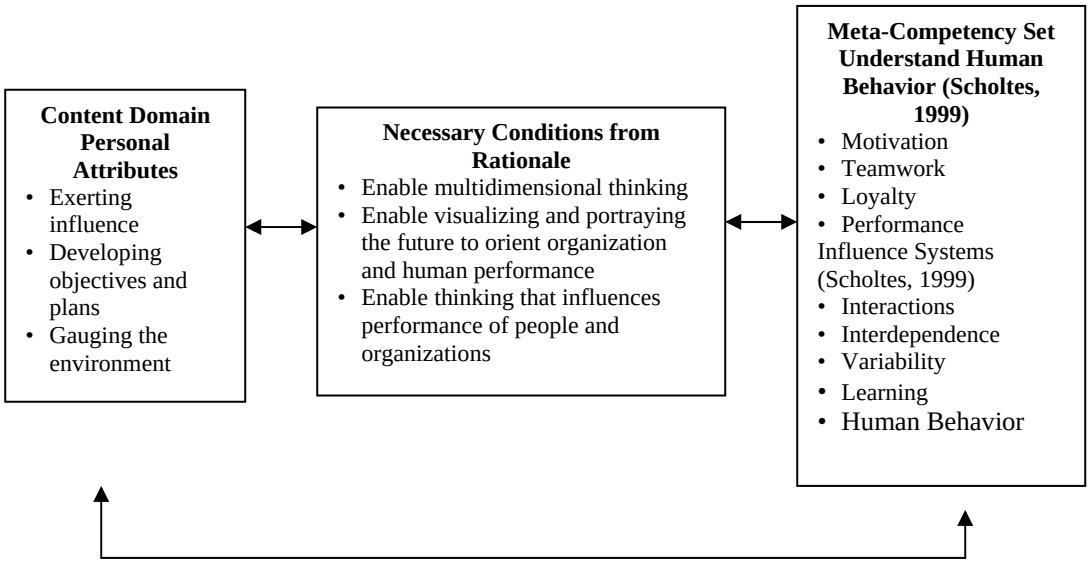


FIGURE 1. Competency Sets Associated with the Personal Attributes Content Domain

In the personal attributes content domain, panel member statements of rationale define conditions that point to a meta-competency set Scholtes (1999) described as understanding human behavior and influencing systems (Figure 1). The meta-competency for understanding human behavior involves combining theories and practices that orient on motivation, teamwork, and learning. The interactions bring a sense of organizational community that lifts performance to establish competitive advantage. Understanding human behavior rests on a foundation principle that all strategies, in the end, improve given situations. Human motivation is a synergistic effect from improving situations. Thus, from a perspective of understanding human behavior, strategy is first about building relationships and the ultimate success measurement for a strategy concerns establishment of an "interactive and inter-dependent community" (p. 707). Meyer and Semark (1996) describe a similar meta-competency in terms of multiple levels of team communications along a continuum that ranges from internal and private exchanges to exchanges with stakeholders throughout the operating environment.

The security framework content domain deals with the master strategist having a systems-level view of political-military issues, including the impact that domestic and international security relationships exert on strategy (Figure 2). The security framework content domain controlling theme focuses on the master strategist in a new environment dealing both with traditional actors from a nation-state model as well as with non-traditional actors from terrorist organizations and failed states. In statements of rationale, panel member described the security environment in terms of mutual dependencies between traditional actors, non-traditional actors, cultural-based

value systems, and power centers. Competencies must enable mental maps that lead master strategists to conceptualize the integration of various means as an inter-dependent entity. Competencies must enable master strategists to update or create competencies as circumstances dictate. Competencies must imbed a sense of organizational design to allow purpose driven arrangement of actors, policies, and strategies.

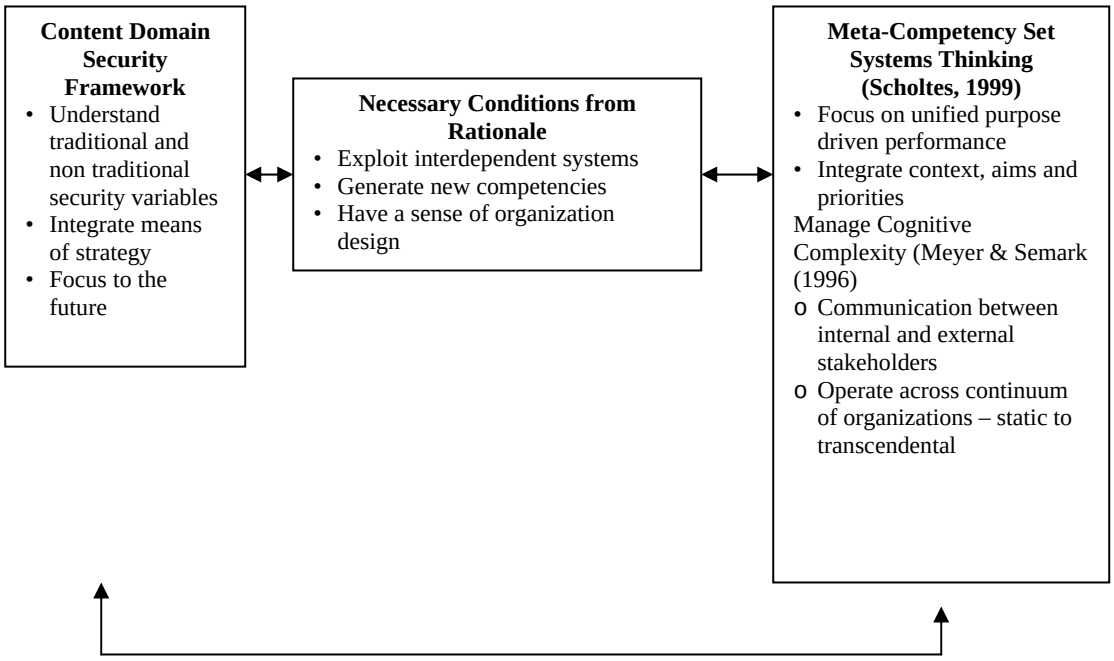


FIGURE 2. Competency Sets Associated with the Security Framework Content Domain

In the security framework content domain, panel member statements of rationale describe conditions that point to a meta-competency set Scholtes (1999) described as systems thinking—showing the larger purpose and meaning of strategy and

orchestrating activities toward achieving the larger purpose (Figure 2). The meta-competency for systems thinking rests on a dominant attractor or center of gravity—everything moves toward a purpose (Echevarria, 2004). The controlling idea is to keep purpose at the cusp of ideas—to instill a sense of organizational community toward a clearly defined purpose. Meyer and Semark (1996) describe a complementary meta-competency of managing cognitive complexity along a continuum anchored on one end at static structures, running through open system self-maintaining structures, and extending to a level of overarching transcendental systems.

The theory-based knowledge content domain provides a view of the master strategist from an academic or intellectual perspective (Figure 3). The domain of intellectual activity based in theory-based knowledge covers a front that ranges from interest in discovering new knowledge to having a solid grounding in classical strategic theory. The aim of the theory-based knowledge content domain is to ensure that future master strategists are well-grounded in a wide range of theories that include economic models, food production, natural resources as well as classical strategic theories. In statements of rationale, panel members described theory-based knowledge that enables a wide range of conditions that support generating new knowledge and gleaning situational understanding of wholes. Theory-based knowledge competencies must enable meta-cognition to deal with self-regulation for a focus on knowledge development, to ask fresh, penetrating questions in ways that expose the unexpected and unknown. Theory-based knowledge competencies must bring a higher order temporal perspective or sense of time independent of constraints

associated with discrete elements of past, present, or future—visualizing time in terms of large chunks that encompass stages of development or progress. Theory-based knowledge competencies must enable high definition resolution in observing relationships among seemingly unrelated concepts or events. Theory-based knowledge competencies must enable the contributions theory brings to inform sound practices.

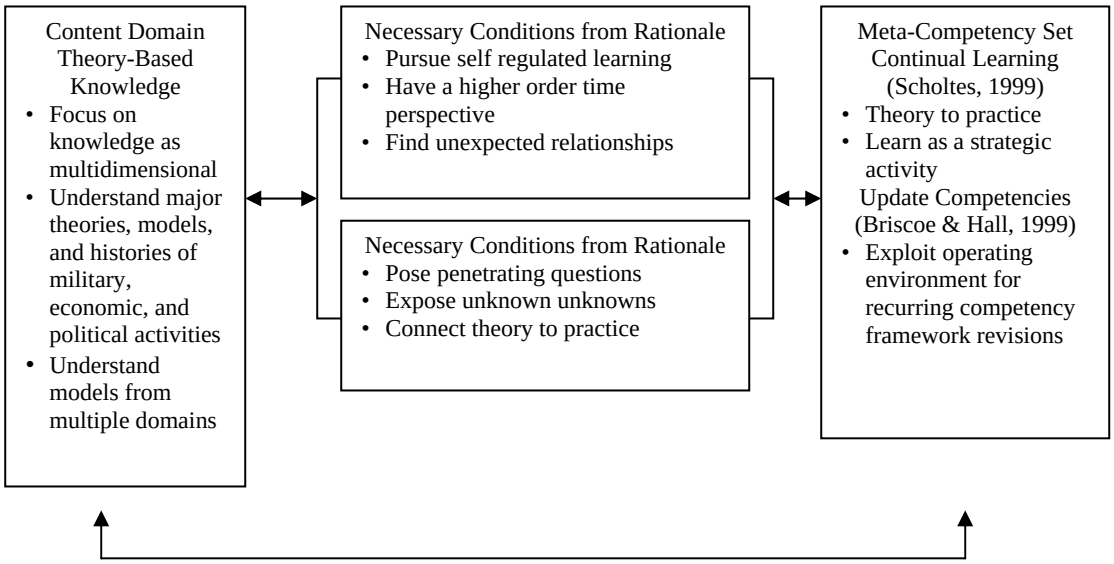


FIGURE 3. Competency Sets Associated with the Theory-Based Knowledge Framework Content Domain

In the theory-based knowledge content domain, panel member statements of rationale describe conditions that link to a meta-competency set Scholtes (1999) described as the interactions between theory-based knowledge and real-world practice—continual learning (Figure 3). As a meta-competency, continual learning is

a cyclical pattern that flows from systems-level thinking by incorporating feedback loops from internal and external sources. Continual learning requires an outlook to seek new knowledge, to challenge the status quo. Continual learning rests on the concept of self-regulation to focus on replenishing knowledge (Sternberg, 1997). In concert with the meta-competency to understand human behavior, continual learning represents a strategic activity. Briscoe and Hall (1999) offered a similar meta-competency to maintain a current professional knowledge framework that is consistent with and responsive to changes in the operating environment. In highlighting the critical importance for a meta-competency that deals with continual learning, Briscoe and Hall (1999) suggested that a professional education program without an inherent replenishment component has an expected life span of no more than four years.

The culture and values content domain places the master strategist in an operating environment (Figure 4). The overarching theme is a futuristic interest in the impact various expansions and contractions of dynamic belief systems exert on security systems. The culture and values content domain elevates the influence emerging from the interactions of belief systems that underpin national and regional security concerns. The aim of the culture and values content domain is to frame professional education with an appreciation for the influence that culture, values, and language have on understanding security issues as well as on policy development. In statements of rationale, panel members described cultural, language, and values-based belief systems as a network configuration of complex feedback loops that defy routine accurate predictions of performance. Culture and values content domain

competencies must enable cognitive abilities to sustain goal-directed performance based on positive and negative feedback loops. Competencies must influence a depth of understanding for cultural and values based truths to enable development of effective alliances, coalitions, and strategies. Competencies must create a sense of personal values that allow strategies focused on making situations better for all concerned parties.

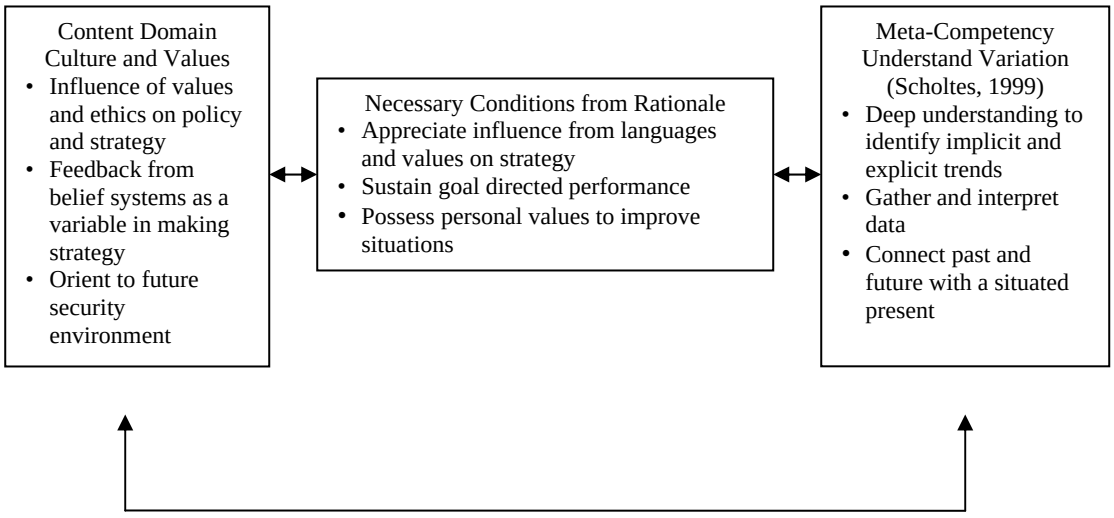


FIGURE 4. Competency Sets Associated with the Culture and Values Content Domain

In the culture and values content domain, panel member statements of rationale link to a meta-competency Scholtes (1999) described as identifying trends where none are apparent—understanding variation (Figure 4). As a meta-competency, under-standing variation involves understanding the intricate maze of connections that exist in data. The premise is that variation is an integral part of the strategic

environment. Cultural truths, language, values, and belief systems constitute data domains that, on surface level analysis, exist without meaningful connections—each data domain is a self-contained entity. The understanding variation meta-competency enables the master strategist to be comfortable in finding meaningful links between data domains that popular techniques hold to be unrelated or even antagonistic. Understanding variation is key to the culture and values content domain because over time, culture and values-based systems fluctuate in two dimensions. The first dimension concerns the ebbs and flows that are inherent to any system—random imperfections are a form of variation. The second dimension concerns variation from perturbations—variation from a non-random force. In order to appreciate fully the trends arising from one dimension of variation, there must be a full understanding of both dimensions.

The intent of associating content domains and statements of rationale looked to provide insight into the competencies that a professional education program for master strategists must put in place. The key task was to identify the competencies that enable a master strategist to satisfy the conditions for each content domain. In the final analysis, rather than competencies, the outcome in each content domain emerged as meta-competencies. The primary meta-competency set for the personal attributes content domain deals with understanding human behavior. The primary meta-competency set for the security framework content domain deals with systems thinking. The primary meta-competency set for the theory-based knowledge content domain deals with continual learning. Finally, the culture and values meta-

competency set deals with understanding variation. The next section is a discussion of analysis designed to develop a response to research question three.

Identifying the Most Important Competencies of a Master Strategist

This section is an analysis of nonparametric and descriptive statistics. The aim was to identify the most important competencies of a master strategist. The statistical analysis procedure involved four steps. The first step involved compilation of the total number of times questions associated with each content domain appeared on the most frequently asked list of questions (Table 6). The second step involved compilation of the total number of times Round Three questions associated with each content domain appeared on the list of questions ranked as priority one or two (Table 7). The third step involved Chi Square Goodness of Fit tests involving the total number of times questions associated with content domains appeared on the list of most frequently asked and most important questions. The final step involved computing measures of central tendency for ranks assigned to all Round Three questions and supporting statements of rationale (Tables 22-26). The resulting set of non-parametric and descriptive statistics (Table 28) established the foundation that supported identification of the most important competencies of a master strategist.

TABLE 28. Frequencies, Central Tendencies, and Variations of Panel Member Questions and Rationale: Descriptive and Nonparametric Statistical Analysis

Item	PA (N=17)	SF (N=15)	TBK (N=24)	CV (N=12)	Chi Square
Total Selections to Most Frequently Asked Question List (Table 6)	31	24	29	16	5.36 df =3 p=.15
Total Selections to Top Two Rank Questions List (Table 7)	8	5	5	2	3.6 df= 3 p=.31
Round 3 Question and Rationale Rank Median (Tables 22-26)	3	3	3	4	N/A
Round 3 Question and Rationale Rank Mode (Tables 22-26)	2	1	3	6	N/A
Round 3 Question and Rationale Rank Standard Deviation (Tables 22-26)	1.62	1.81	1.59	1.94	N/A

Legend: Content Domain Personal Attributes (PA); Strategic Framework (SF); Theory-Based Knowledge (TBK); Culture and Values (CV)

As discussed in the response to research question two, the personal attributes (PA), strategic framework (SF), theory-based knowledge (TBK), and culture and values (CV) competency content domains provide the architectural design of a professional education program for master strategists. Each of the four content domains derived from panel members' questions concerning the design of a professional education framework for future master strategists. Panel member questions that were repeated a minimum of four times across the three Delphi rounds

were added to the list of most frequently asked questions (Table 6). Panel member questions that were ranked as priority one or two in the third Delphi round were added to the list of most important questions (Table 7). The total number of times a question appeared on the list of most frequently asked questions or the list of most important questions was frequency data. As such, Chi Square Goodness of Fit was the appropriate statistical test to determine distribution normalcy of the frequency counts across the four content domains. In keeping with established protocols for social science statistical research, the alpha level for significance was at or less than .05 (Gay, 1996).

Results of the Chi Square tests are at Table 28. Across the four content domains, questions in the personal attributes (PA) content domain had the highest number of selections to the list of most frequently asked questions followed, in turn, by the theory-based knowledge (TBK), strategic framework (SF) and culture and values (CV) content domains. The Chi Square value of 5.36 with three degrees of freedom was not significant (p=.15). Along the same lines, the PA content domain had the highest number of selections to the list of most important questions and the CV content domain had the least number of selections to the list of most important questions. In the middle, the SF and TBK content domains each had five selections to the list of most important questions. Again, the Chi Square value of 3.6 with three degrees of freedom was not significant (p=.31). Thus, based on the number of times questions appeared on the lists of most frequently asked and most important questions, characteristics associated with the competency content domains of personal

attributes, strategic framework, theory-based knowledge, and culture and values have equal importance in the education of future master strategists.

In Delphi Round Three, panel members indicated a rank order of their questions and supporting rationale for contributions to a professional education program for master strategists. In ranking questions and supporting rationale, panel members indicated their most important as number one to least important number six. In the third round, panel members posed a total of 68 questions and one panel member opted out of indicating a rank order for six questions—a total of 62 questions were on the rank order list. The appropriate measures of central tendency for ordinal data are the median and mode (Gay, 1996).

Descriptive statistics for the median and mode of Round Three questions and supporting rationale are at Table 28. The PA, SF, and TBK content domains each had a median rank order value of three while the CV content domain median rank order value was four. In ranking questions and supporting rationale on a scale from one to six, the median ranks of three and four suggested no clear hierarchy. In contrast, the mode, or most frequent, rank order values indicated three tiers of ranks for master strategist competencies. In the bottom tier, panel members consistently ranked the CV content domain as the least important with a most frequent ranking of six. In the middle tier, panel members consistently ranked the PA and TBK content domains as second and third priority, respectively. In the top tier, panel members consistently ranked the SF content domain as most important.

Panel member rankings established a clear priority ranking among content domains, conditions and competencies in only one of four analysis areas—the mode

(Table 28). Thus, the larger trend suggests that panel members viewed content domains and competencies more from the perspective of a whole program or person. Chilcoat (1995) described the roles of master strategist in a holographic framework of thinking and acting. In like fashion, the meta-competencies of systems thinking, understanding human behavior, continual learning, and understanding variation describe professional education for a master strategist in terms of a unified whole. As with roles, the most important competency is situation dependent.

The final response to Research Question Three becomes—the most important competencies for a master strategist are a set of meta-competencies. The situation drives relative importance among systems thinking, understanding human behavior, continual learning, and understanding variation. Panel member responses indicated that competencies have relevance within a professional education framework. The following section is a summary of the results and analysis of this study. The aim was to meld responses from the three research questions into a competency based professional education framework for master strategists.

Summary of the Results and Analysis

The purpose of this study was to develop a systems framework to guide the professional education of master strategists. This section is a summary discussion of the review of literature and of relationships between the three components of a professional education framework that were developed in this study—content domains, conditions, and competencies. The aim was to provide a bridge connecting existing knowledge to the results and analysis of data collected in this study.

In the review of literature, a master strategist was defined as a unique individual with cognitive abilities unlike other people (Chilcoat, 1995; Ohame, 1982). The theory base for a master strategist professional education program carried the definition forward with a pattern of propositions that integrated components of logic from the management as science position, creativity from the management as art perspective and, added situated practice (Jarzabowski, 2003; Sanchez & Heene, 1997b; Sternberg, 1997). Finally, in professional education competency models, competencies were described in terms of dynamic abilities that have a self-generating quality (Brown & McCartney, 1995; Cheetham & Chivers, 1996).

The responses to research questions brought forward important concepts established in the review of literature. The response to Research Question One incorporated from the review of literature descriptions of master strategist attributes that included roles of strategic leader, theoretician, and practitioner. The response to Research Question Two integrated important concepts from the theory base for this study. The response to Research Question Three integrated concepts from the theory models of professional education. Thus, key concepts from the review of literature were imbedded throughout the discussion of the results and analysis of the data collected in this study.

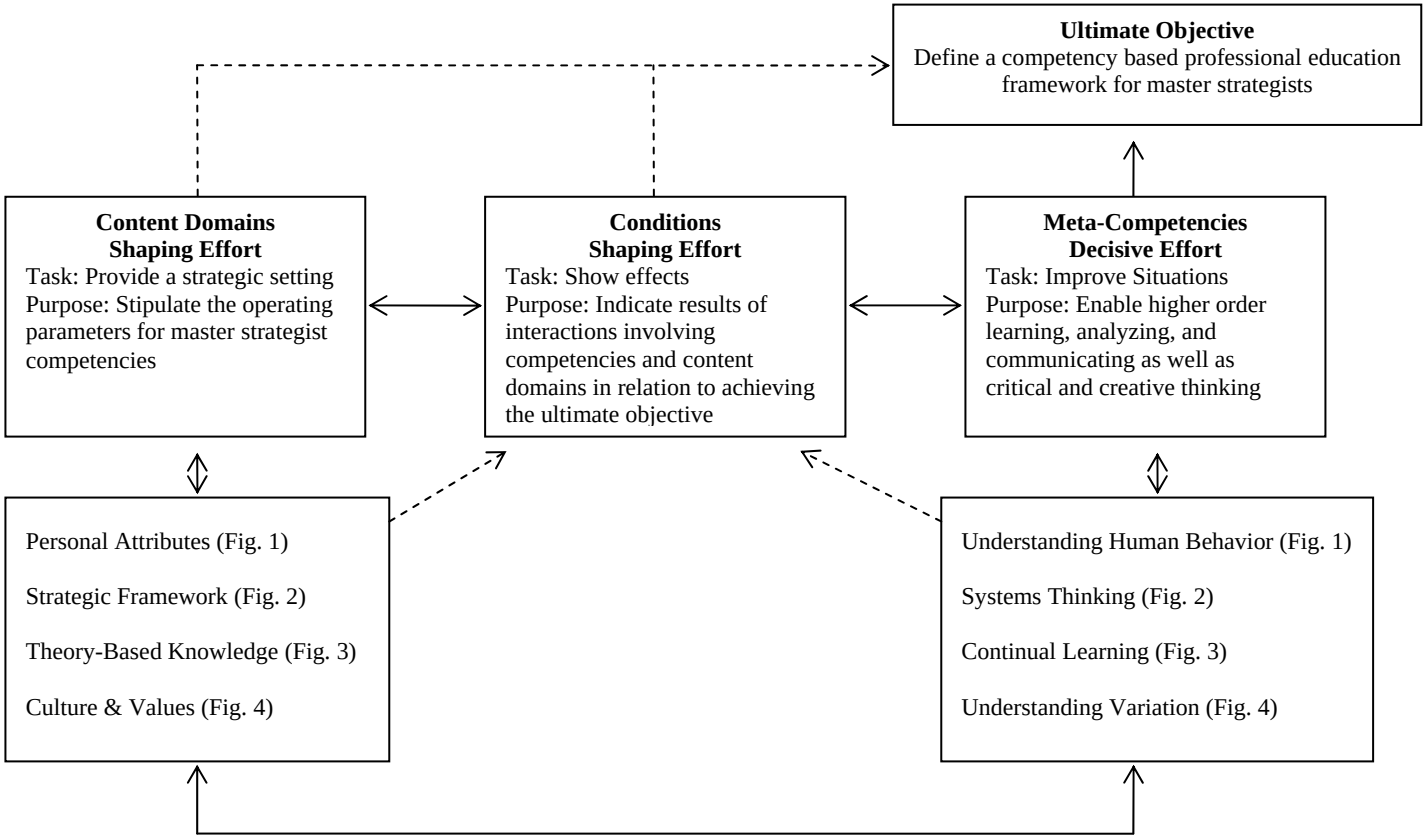
In straightforward terms, the data from this study provided a response to each research question. The first research question dealt with identifying competency content domains—master strategist personal attributes, characteristics of the strategic framework, elements of theory-based knowledge, and issues of culture and values. The second research question dealt with identifying the contributions that

competencies must make to a professional education framework. Competencies must enable the master strategist to influence situations, to understand relationships, to develop effective alliances, and to develop new knowledge. The third research question dealt with identifying the most important competencies of a master strategist. The most important competencies are, in fact, a set of meta-competencies that concern systems thinking, understanding human behavior, continual learning, and understanding variation. Thus, the data supported responses to the research questions.

In the final analysis, the deciding issue concerns how well responses to the research questions oriented on the larger study purpose of identifying a framework for the professional education of master strategists in national security. The nesting diagram is a common, but undocumented, approach in Army planning that helps to ensure that all components of an operation fit in a collaborative network with an orientation on the main effort. Scant documentation is likely a reflection of the simplicity of a nesting diagram. In basic form, the nesting diagram provides three pieces of information: designation of the main and shaping efforts, relationships of organizations or components in the operation, and the task and purpose for each component. In other words, a nesting diagram is like an executive summary with sufficient information to make informed decisions without the complete operations plan or report.

The primary task for this study was to identify the most important competencies of a future master strategist. The overarching objective was to develop a professional education framework to prepare master strategists to operate in an ever-changing

security environment (Figure 5). Based on the primary task and results of this study, meta-competencies constitute the main effort. The meta-competencies of systems thinking, understanding human behavior, continual learning, and understanding variation act in concert as the substance of a professional education program. The task for the competencies component is to enable master strategists to improve situations (National Security Strategy, 2002). The purpose that competencies must satisfy is to enable higher order learning, analyzing, and communicating as well as adaptive, critical, and creative thinking. Panel members described two shaping or supporting efforts. The first shaping operation concerns the four content domains—personal attributes, strategic framework, theory-based knowledge, and culture and values. The task of the content domains component is to provide a strategic setting for the main effort. The purpose of the content domains component is to stipulate operational parameters for the main effort. In other words, the content domains outline the operational space that surrounds competencies. A second shaping operation concerns conditions drawn from panel member statements of rationale. The conditions component task is to define effects that competencies must establish. The conditions component purpose is to show results of interactions between competencies and the content domains based on achievement of the ultimate objective—preparing master strategists to operate in an ever changing strategic environment.



Note: Solid lines represent nested relationships; dashed lines represent direct contributions; one-direction arrows represent linear relationships; bi-direction arrows represent interdependent relationships.

FIGURE 5. Nesting Diagram of a Professional Education Program Framework for Master Strategists

A nesting diagram has the effect of a quality control check to ensure all components of a plan or report support the main effort to achieve the stated objective. The objective in this study focused on identifying a competency based professional education framework for master strategists in national security. In the final analysis, the three components identified from analysis of panel member responses were nested in relation to the intended purpose of this study. The findings, conclusions, and recommendations for practice will be presented in the following chapter.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to develop a competency framework to inform development of a professional education program for master strategists in national security. The study was based on the premise that while there is abundant capacity to produce applied strategists, the research problem focused on the absence of a competency framework to guide professional education and development of theoretical, master strategists (Cheetham & Chivers, 1996; Chilcoat, 1995; Lester, 1995; Metz, 1991; Mintzberg, 1990). This chapter is a summary of the findings, conclusions, and recommendations that, in combination, respond to the research problem that framed the study. This chapter has five major sections. The first section is a summary of findings. The purpose was to provide a synthesis of the results of analysis of the data related to each research question. The second section is a set of conclusions from analysis of the data. The purpose was to interpret results of analysis in order to support development of recommendations. The third section deals with recommendations to the field. The purpose was to make a practical application of the findings and conclusions in response to the need to identify a competency framework to inform the professional education of national security master strategists. The fourth section deals with future research topics. The purpose was to identify future areas of additional research that could add clarity to the professional education framework for master strategists. The final section is a summary of the study. The purpose was to provide a final estimate of the significance of this study.

Findings from Analysis of the Data

This section deals with findings related to the three research questions that this study was designed to answer. The findings for each research question were derived from a synthesis of analysis of the data generated over the course of this study. This study followed a methodology based on the Delphi technique that maximizes the talent, experience, insight and knowledge of a panel of experts. As described in the previous chapter, the 12-member panel of experts in this study generated three functional lines of data. The first data line concerned questions in narrative form (the input provided in each round). The second data line provided rationale on how questions aided development of a professional education program. The final data line provided a rank order of Round Three questions and rationale. The three data lines were used singly and in combinations as a unique data set for developing a response to each research question. The data set for Research Question One combined the first and third data lines. The data set for Research Question Two relied on the second data line. The data set for research question three combined data lines two and three.

Key Findings Related to Research Question One

The first research question was, "What are the content domains of the most important competencies of a master strategist as perceived by qualified professional strategists?" The following findings are derivative from analysis of the results of this study relating to research question one.

1. Panel members showed greatest interest in the topic of interpersonal communication as a form of strategic-level interaction. The question

concerning interpersonal communication received the most votes both on the list of most frequently asked questions and the list of questions ranked as first or second priority (Tables 6 and 7).

2. Panel members viewed personal attributes for master strategists as a critical area. Six of the eight questions in the personal attributes content domain were on the list of rank order in first or second priority. The personal attributes content domain captured the largest number of questions designed to identify competencies for a future master strategist (Tables 6, 7, and 13).
3. The content domain of theory based knowledge represented the most important area of panel member concern. Among the five questions in the theory-based knowledge domain, four appeared on both the list of most frequently asked questions and on the list of questions ranked as first or second priority (Tables 11 and 15).
4. Panel member questions concerning competencies for a master strategist supported the master strategist construct of strategic leader, theoretician, and practitioner. In patterns and themes, panel member questions to identify content domains incorporated concepts such as establishing a vision, developing strategic concepts, preparing plans, respect for values and, of greatest interest, effective communications. All of the driving concepts of a master strategist fall in line with the definitions of strategic leader, theoretician, and practitioner.
5. Four content domains of personal attributes, security framework, theory-based knowledge, and culture and values encompass the range of competencies for a

master strategist professional development framework. Three alternative plausible explanations, while offering different domain titles, nonetheless, provided overall support for the content domains developed in this study (Tables 13 - 20).

6. As a personal attribute, time perspective concerned visioning, setting objectives, and planning. In the security framework and theory-based knowledge content domains the temporal theme concerned futures-type concerns to grasp new means of conflict resolution and knowledge domains, respectively. In the culture and values content domain, time was framed as a futuristic interest in the extent of change in belief systems and the influence that specific belief systems exert on security matters. Thus, time perspective emerged as a transcendent theme across the four content domains (Tables 13, 14, 15, 16, and 29).

TABLE 29. Description of Relationships between Content Domain Characteristics and Panel Member Statements of Rationale Describing Contributions Competencies Make to Inform a Framework for Master Strategist Professional Education

Characteristics of Content Domains for Master Strategist Professional Education	Competency Contributions to a Professional Education Framework
Personal Attributes - Leader attributes of interpersonal exchanges, unifying allies, influencing opponents and visioning. - Planning attributes of foresight, setting objectives and developing plans. - Analysis attributes dealing with gauging political conditions, understanding issues that unite and separate allies.	- Enable multidimensional, holistic thinking. - Enable visualizing and portraying the future to orient organizational performance and human behavior. - Enable thinking that influences performance of people and organizations.

TABLE 29. Continued

Characteristics of Content Domains for Master Strategist Professional Education	Competency Contributions to a Professional Education Framework
Strategic Framework - Actor focus concerning primacy of nation sates as an organizing construct to understand the world and develop strategy in contrast to emergent non-traditional actors of the current security environment. - Tools focus to the means of strategy such as economic or military capabilities and new technologies. - Futuristic focus on develop of new methods to resolve conflict that impact the use of military force as an instrument of national policy and integration of domestic political priorities into security policy.	- Establish a higher order, integrated temporal perspective that orients performance across time expanses such as epochs or ages. - Bring breadth of understanding of relationships conventional thinking views as non existent. - Enable non mental maps to conceptualize feedback loops, mutual dependence between systems and integration of various means as a dynamic entity.
Theory-Based Knowledge - Intellectual focus on knowledge as a domain consisting of new knowledge and grounding in classical strategic theory. - Understanding major theories, models and histories of conflict in the application of military power, economic assistance or political involvement. - Understanding American as well as international environmental economic models in order to develop feasible strategic options.	- Lead to a set of meta-competencies, in order to allow critical self-regulation leading to new knowledge and situational understanding; abilities to grasp new ways of knowing and of developing knowledge. - Support growth of questions that emerge as new knowledge; intellectual activity to develop theories that explain unknowns. - Enable master strategists to connect theoretical knowledge to practice. - Pose questions to expose unknown unknowns.
Culture and Values - Influence of Judeo-Christian ethics and values on international law. - Influence of continuing rise of Islamic extremism. - Influence that culture and values have on understanding security threats as well as on policy development.	- Bring depth of understanding for languages and culture-based truths to enable effective alliances, coalitions and strategies. - Instill a sense of personal values to allow strategies focused on making situations better. -- Imbed a sense of inquiry to comprehend future shifts or changes within and across belief systems.

7. Given longstanding existence of the Information Age (Schwartz & Ogilvy, 1979; Toffler, 1980) and the importance of information management competencies (Nadler & Tushman, 1999), there was an apparent gap in the data set. Panel members posed no questions with specific interest in information management or information operations. Only through indirect relationships to the impact of technology to revolutionize or alter the balance of power was there a connection to information as an important competency for a master strategist (Tables 14 and 30).

TABLE 30. Description of Relationships between Content Domain Characteristics, Competency Contributions from Panel Member Statements of Rationale and the Competency Framework for the Professional Education Framework for Master Strategists

Content Domains that Respond to Research Question One	Competency Contributions that Respond to Research Question Two	Competency Framework that Responds to Research Question Three
Personal Attributes - Leader attributes of interpersonal exchanges, unifying allies, influencing opponents and visioning - Planning attributes of foresight, setting objectives, and developing plans - Analysis of attributes dealing with gauging political conditions, understanding issues that unite and separate allies	- Enable multidimensional, holistic thinking. - Enable visualizing and portraying the future to orient organizational performance and human behavior. - Enable thinking that influences performance of people and organizations.	- Meta-Competency Set to understand Human Behavior (Scholtes, 1999). Motivation, teamwork, loyalty, and performance. - Meta-Competency to Influence Systems (Scholtes, 1999). Interactions, interdependence, variability, and learning.
Strategic Framework - Actor focus concerning primacy of nation states as an organizing construct to understand the world and develop strategy in contrast to emergent non-traditional actors of the current security environment - Tools focus to the means of strategy such as economic or military capabilities and new technologies - Futuristic focus on development of new methods to resolve conflict that impact the use of military force as an instrument of national policy and integration of domestic political priorities into security policy	- Establish an integrated temporal perspective that orients performance across time expanses such as epochs or ages. - Bring breadth of understanding of relationships conventional thinking views as non-existent. - Enable mental maps to conceptualize feedback loops, mutual dependence between systems and integration of various means as a dynamic entity.	- Meta-Competency Set for Systems Thinking (Scholtes, 1999). Focus on unified purpose-driven performance, integrate context, aims, and priorities. - Meta-Competency Set to Manage Cognitive Complexity (Meyer & Semark, 1996). Communication between internal and external stakeholders, operate across a continuum of organizations—static to transcendental.

TABLE 30. Continued

Content Domains that Respond to Research Question One	Competency Contributions that Respond to Research Question Two	Competency Framework that Responds to Research Question Three
Theory-Based Knowledge - Intellectual focus on knowledge as a domain consisting of new knowledge and grounding in classical strategic theory - Understanding major theories, models, and histories of conflict in the application of military power, economic assistance, or political involvement - Understanding American as well as international environment economic models in order develop feasible strategic options	- Lead to a set of meta-competencies in order to allow critical self-regulation to new knowledge and situational understanding. - Support growth of questions that emerge as new knowledge. - Support intellectual activity to develop theories that explain unknowns. - Enable master strategists to connect theoretical knowledge to practice. - Pose questions to expose unknown unknowns.	- Meta-Competency Set for Continual Learning (Scholtes, 1999). Theory to practice, learn as a strategic activity. - Update Competencies (Briscoe & Hall, 1999). Exploit the operating environment for recurring competency framework revisions
Cultures and Values - Influence of Judeo-Christian ethics and values on international law - Influence of continuing rise of Islamic extremism - Influence that culture and values have on understanding security threats as well as on policy development	-Bring depth of understanding for languages and culture-based truths to enable effective alliances, coalitions, and strategies. - Instill a sense of personal values to allow strategies focused on making situations better. - Imbed a sense of inquiry to comprehend future shifts or changes within and across belief systems	Meta-Competency to Understand Variation (Scholtes, 1999). Deep understanding to identify implicit and explicit trends, gather and interpret data, and connect past and future.

Findings Related to Research Question Two

The second research question was, "How do questions to identify the most important competencies inform development of a professional education program for master strategists as perceived by qualified professional strategists?" The following findings are derivative from analysis of the results of this study relating to Research Question Two.

1. In describing master strategist competencies, panel members moved away from the scientific perspective that defined competency as a task or specific action (Herling, 2000). Rather, panel members explained competencies that enable the master strategist to apply current knowledge, skills, and abilities as well as to incorporate context in building competencies that hold future value—lending support to descriptions in literature (Cheetham & Chivers, 1998; Van der Klink & Boon, 2002). Master strategist professional education must imbed abilities to ask insightful questions, construct problem statements that reflect components of a situation, and design unique strategies to solve those problems. Master strategists must be capable of creating new knowledge in light of experience, knowledge, and theory. Master strategists must be responsive to the need to create competencies where none exist (Tables 23 and 27; Figures 6 and 7).
2. Panel member statements of rationale for competencies supported the personal attributes, theory based knowledge, security framework, and culture and values content domains (Table 29). Rationale concerning the personal attributes content domain focused on communication in face-to-face

engagements as well as through plans. Rationale concerning cognitive abilities as well as exploration for new knowledge focused on theory based knowledge encompassing a wide range of extant as well as future academic disciplines. Rationale concerning mental maps that make sense of interactive relationships aligned with the security framework content domain that covered the relationships between political—military as well as domestic and international security relationships. Rationale concerning an understanding of languages and personal values to improve situations aligned with the culture and values content domain dealing with ethics, values, and culture based truths.

3. Panel member statements of rationale concerning questions that identified the most important competencies for a master strategist in national security supported the theory foundation base for this study (Table 27). In patterns and themes, panel member statements described a professional education framework that incorporated concepts such as multidimensional intelligence from triarchic theory, strategy as a product of interactions among various actors over time from activity theory, and strategy development as a cognitive competition from competency theory. All components of the professional education framework build from a foundation composed of triarchic theory, activity theory, and competency theory.
4. Panel member statements of rationale supported the master strategist construct of strategic leader, theoretician, and practitioner. Panel members highlighted strategic leader abilities concerning multidimensional intelligence enabling

clear visions that frame strategy from start to end state as well as to mitigate unfounded biases to naturally oppose some practices and to discount some information as not relevant. Panel members drew attention to strategic theoretician abilities for developing strategic concepts and theories that integrate all elements of national power. Panel members highlighted interconnections or feedback loops in the security environment that nest with the strategic practitioner role to achieve strategic objectives by integrating all available means to ends with a sense of timing for taking the appropriate action at the optimal moment.

5. In discussions about the personal attributes content domain, panel members framed a time perspective that concerned visioning, setting objectives, and planning. Similarly, in discussions concerning cognitive abilities, panel member discussions highlighted the integration of environmental influences into strategy and exploration for new knowledge. Panelists emphasized time perspective as an important factor in planning and strategy development. Master strategists need to sense time as epochs and ages of development, to comprehend time as related building blocks of past, present and future. Furthermore, in describing mental maps for dealing with interactive relationships, panel members detailed the importance for master strategists to have a time perspective that enabled abilities to overcome the loss of continuity or momentum during times of discovery and transition. Thus, a higher order temporal perspective was a common theme in panel member statements of rationale for contributions that competencies must make to a

professional education program for master strategists (Table 27; Figures 6 and 7).

Findings Related to Research Question Three

The third research question was, "What are the most important competencies of a master strategist as perceived by qualified professional strategists?" The following findings are derivative from analysis of the results of this study relating to Research Question Three.

1. Panel members described professional education requirements that point to meta-competencies as the building blocks for a master strategist program. Patterns and themes repeatedly touched on master strategist capacities to engage in higher order learning, meta-cognition, and self-regulation—all components related to the generation of new capabilities (Table 27; Figures 6 and 7).
2. Panel members ranked the strategic framework content domain as first among equals. In the analysis of the median as a measure of central tendency for the number of times questions associated with each content domain appeared on the lists of most frequently asked and most important questions, priority rankings were inconclusive. Likewise, a Chi Square nonparametric statistical test of the same data indicated no significant difference among the four content domains. Only the mode as a measure of central tendency provided a clear hierarchal ranking of the four content domains to indicate the strategic framework content domain as being first among equals (Table 28).

3. Panel members selected most often questions from the personal attributes content domain across the three Delphi rounds. The question dealing with interpersonal communication was the most frequently asked question with a total of seven selections (Tables 6 and 28). While indicative of responses for this study, panel member interest in the personal attributes content domain and interpersonal communication did not rise to a level of statistical significance (p=.15).
4. Panel members most often gave a first or second priority rank to questions from the personal attributes content domain. The question dealing with interpersonal communication was ranked as the first or second priority a total of three times (Tables 7 and 28). While indicative of responses for this study, panel member priorities in the personal attributes content domain did not rise to a level of statistical significance (p=.31).
5. Panel member ranking of all questions and supporting rationale in Round Three indicated no firm rank order. Panel members assigned a median priority rank of three, on a scale of one to six, for all questions associated with the strategic framework, personal attributes, and theory-based knowledge content domains. The median priority rank for the culture and values content domain was four (Table 28).
6. The content domains, conditions from statements of rationale, and competencies derived from data collected in this study support development of a professional education framework for master strategists. Based on descriptions developed in the review of literature, patterns and themes developed

from content analysis of the data, statistical analysis, and a nesting diagram, the collected data and analysis strategy provided a valid response to the study's stated purpose (Tables 27 and 28; Figures 6 and 7).

Conclusions from Analysis of the Data

This section deals with conclusions derived from analysis of the data generated through this study. The following conclusions were drawn from analysis of the data in order to enable interpretation of the results of analysis of the data.

1. The mind of a master strategist is of a unique type with unique educational needs (Cheetham & Chivers, 1998; Chilcoat, 1995; Metz, 1991; Ohame, 1982; von Oetinger, 2001).

Discussion: Master strategists operate seamlessly in and across domains that include personal attributes, security frameworks, theory-based knowledge, and culture and values content domains. The mind of a master strategist is, at once, a strategic leader, strategic theoretician, and strategic practitioner in keeping with Chilcoat's (1995) description of master strategists. A master strategist professional education framework needs to follow a multi-discipline approach. Across the competency content domains the panel of experts described the need for bringing political, military, economic, diplomatic, and social domains into an integrated whole.

2. The theory base of a professional education framework for master strategists needs to cover a wide range of subject matter domains (Cheetham & Chivers, 1998; Chilcoat, 1995).

Discussion: In addition to prevailing theories relating to history and classical studies, panel members referred to theories relating to economics, environment, health, political science, and culture. There are inferences to a much broader range of theories in social science, business, cultural geography, and learning. Likewise, the professional education framework must prepare master strategists to pose penetrating questions in order to construct problems that accurately reflect a particular setting and design ways to solve those problems. Master strategists must be prepared both to be proficient in existing domains of knowledge and, more importantly, to create new knowledge through critical reflection that continually questions current practice in light of experience, knowledge, and theory.

3. Identifying a cogent time perspective construct for master strategists is a foundation issue in developing a professional education program (Tables 13, 14, 15, 16, and 30).

Discussion: Panel members emphasized a necessary ability for a master strategist to operate across a time continuum anchored on one end in the past, classical studies, through the present and extending into the future, visioning and positing plausible alternative futures. Panelists emphasized time perspective as an important factor in planning and strategy development. Master strategists need a higher order sense of time as epochs and ages of development, to comprehend time as related building blocks of past, present, and future. Furthermore, in describing mental maps for dealing with interactive relationships, panel members detailed the importance for master strategists to have a time perspective that enabled abilities to overcome the loss of continuity or momentum during times of discovery and transition.

4. The education framework for a master strategist has a focus on establishing education conditions that flow from linked sets of attributes (Table 27).

Discussion: Panel members framed master strategist professional education in terms of coming to understand how traditional and non-traditional actors interact to impact the strategic environment. Likewise, the panel highlighted the need for master strategists to exert influence through personal abilities to mitigate differences and to bring focus on goal directed activities. Panel members showed interest in master strategists having a mental outlook to seek opportunities and knowledge in unexplored locales. Panel members described a master strategist professional education framework that has areas of lesser and greater emphasis. The lesser area of emphasis is to build abilities to operate the strategy development process. The greater area of emphasis is to develop highly qualified learners and thereby enable master strategists to update or create competencies as circumstances dictate.

5. Professional education for master strategists requires competencies to perform specific activities as well as meta-competencies to update existing competencies and generate new competencies—as circumstances warrant (Table 30).

Discussion: Throughout discussions of content domains and rationale for future competencies, the panel of experts described the operating environment in flux and emphasized that master strategists employ a wide range of skills in transforming any situation to an improved condition. The master strategist professional education framework enables self-directed, life-long learning in either a structured or unstructured setting. The professional education framework must prepare master

strategists to maintain competencies consistent with evolutions of the operating environment.

6. Master strategists are life-long, continual learners (Table 30).

Discussion: A professional education framework for master strategists emphasizes that performing and learning are an integrated whole. There is no doubt that master strategists need to have a refined understanding of the strategy process and strategic framework. More importantly, master strategists must take a leading role in developing the best questions that bring the clearest description of a problem in order to design effective ways to solve problems. Panel members described the master strategist as an individual with propensities to question current practice in light of experience, knowledge, and theory. The master strategist professional education framework is less a set of competencies to be mastered and more an ongoing professional education effort based in using sets of meta-competencies.

7. Professional education for master strategists is dynamic, responsive to the strategic environment (Table 30).

Discussion: In a master strategist professional education program, individual learning habits or practices transcend formal institutional programs. Master strategists have a primary role to shape the strategic environment and individual capacities to satisfy that role go hand-in-hand with capacities to drive and shape professional development at a personal level. The master strategist professional education framework includes a requirement to develop self starters because master strategists must exercise self-regulation in developing new competencies.

8. In designing a professional education program for master strategists, clear statements outlining specific tasks and purposes are essential steps in the development process (Figure 5).

Discussion: In order to have a dominating presence, the master strategist requires situational understanding to a degree that requires clarity that is specific along with concurrent latitude to be creative. A professional education program for master strategists needs to balance the structure of a theory based higher education academic program with the needs of an operationally oriented professional practitioner. Across the three Delphi rounds, the panel of experts referred to the need for a broad theory base as well as for an in depth grasp of how people and belief systems affect strategic policies and plans.

9. The competency framework for master strategist professional education (Table 30) has strong connections to the theory of profound knowledge (Deming, 1994; Scholtes, 1999).

Discussion: In the personal attributes content domain, panel member statements of rationale define conditions that point to a meta-competency set (Figure 1) which Scholtes (1999) described as understanding human behavior and influencing systems. The meta-competency for understanding human behavior involves combining theories and practices that orient on motivation, teamwork, and learning. In the security framework content domain, panel member statements of rationale describe conditions that point to a meta-competency set (Figure 2) which Scholtes (1999) described as systems thinking—showing the larger purpose and meaning of strategy and orchestrating activities toward achieving the larger purpose. The meta-

competency for systems thinking rests on a dominant attractor or center of gravity—everything moves toward a purpose (Echevarria, 2004). In the theory-based knowledge content domain, panel member statements of rationale describe conditions that link to a meta-competency set (Figure 3) which Scholtes (1999) describes as the interactions between theory based knowledge and real-world practice—continual learning. As a meta-competency, continual learning is a cyclical pattern that flows from systems level thinking by incorporating feedback loops from internal and external sources. In the culture and values content domain, panel member statements of rationale link to a meta-competency (Figure 4) which Scholtes (1999) describes as identifying trends where none are apparent—understanding variation. As a meta-competency, understanding variation involves understanding the intricate maze of connections that exist in data. The premise is that variation is an integral part of the strategic environment.

10. The personal attributes, security framework, theory based knowledge, and culture and values content domains with associated meta-competency sets satisfy the Skelton Panel (1989) stipulation regarding professional education for theoretical or master strategists.

Discussion: The Skelton Panel (1989) stipulated that professional education for master strategists must address four basic competencies. First, master strategists must be analytical—see beyond facts and find the underlying relationships. Second, master strategists must be pragmatic—aware of emerging trends and of the need to continually revalidate strategic constructs. Third, master strategists must be innovative—able to challenge and change the status quo. Finally, master strategists

must think strategically on domestic and international trends in political, technological, economic, scientific, and social issues. The four content domains identified in this study combined with the meta-competency sets meet the letter of the law as well as the larger intent the Skelton Panel looked to satisfy in describing master strategists.

Recommendations to the Field of Professional Education

This section deals with recommendations to the field of professional education concerning specific measures for making practical applications of the findings and conclusions from this study. The Delphi panel of experts had the task of guiding an exploration of the future for the purpose of developing a competency framework to shape the professional education of master strategists in national security. Panelists described the path to the future as increasingly dynamic and complex. The data supported two categories of primary patterns and themes. The first category emphasized the importance of developing master strategists. The second category provided warnings of inherent difficulty in developing a professional education program that prepares master strategists to shape and influence an ever-changing and complex security environment. The panel of experts provided a set of informed ideas on measures that will enable a proactive approach to shaping the future—through a well-developed professional education program for master strategists. The following recommendations flow from collective judgments that the panel of experts honed through the course of this study. The recommendations are intended as guides to help set future directions for professional education programs designed to develop master strategists in national security.

1. Frame a professional education progression from strategist to master strategist attributes, skills, and competencies within the personal attributes, strategic framework, theory based knowledge and culture and values content domains.
2. Design an instrument or methodology to identify a higher order time perspective construct that is consistent with master strategist requirements to operate seamlessly across a time continuum that extends from the distant past through the distant future.
3. Identify existing theoretical foundations for programs designed to develop master strategists in order to compare the existing theory set to the theory set and theory based knowledge requirements established in this study. The outcome from such a comparison will indicate a way to measure effectiveness and adequacy of the theory base in current programs aimed at developing strategists and master strategists.
4. Frame master strategist professional education in terms of linked attributes that bring specified conditions over learning goals or objectives in order to reinforce the notion that master strategists are life long learners in pursuit of unimagined knowledge.
5. Develop curriculum that prepares master strategists to dominate situations, enables cognitive abilities to deal with concepts of space and time, imbeds mental maps to understand interactive relationships among various environmental influences, and instills a desire to search for knowledge in unexplored locales.

6. Establish the main effort in master strategist professional education on a path leading to development of meta-competencies that enable abilities to update existing competencies or develop new abilities. Specifically, meta-competencies should cover attributes in the personal attributes, strategic framework, theory based knowledge, and culture and values content domains developed in this study (Table 29).
7. Identify the existing education framework designed to develop attributes of master strategists for comparison to the professional education framework for master strategist attributes established in this study in order to gauge the effectiveness and adequacy of current programs aimed at developing strategists and master strategists.
8. Stress the importance of master strategists having a solid, multi-discipline foundation in theory-based knowledge that included international relations, change, economics, agriculture, organizational design, and management. Likewise, panel members held in equal high regard the transfer of theory based knowledge to practical applications—devising effective strategies and plans. Professional education programs for master strategists should be designed as uniquely more powerful than current Intermediate and Senior Level Professional Military Education programs (Tables 1-3) in terms of academic rigor, individual contributions to the learning process, and theory to practice linkages.
9. Include meta-competencies in professional education programs that have a purpose to prepare officers a masters in any given area. By definition (Table

5), competencies establish educational goals in terms to required knowledge or qualities associated with a given role. Professional strategists in this study highlighted the need that senior officers be equipped with capacities to generate new competencies.

10. Adopt the theory of profound knowledge (Deming, 1994; Scholtes, 1999) as the central concept that underpins development of a competency framework for professional education program to prepare officers as master strategists. According to Deming (1994), profound knowledge theory holds that an understanding of systems theory, theory of variation, theory of psychology, and theory of knowledge are integrated to form a holistic perspective. The meta-competencies framed within the theory of profound knowledge amplify the potential power contained in the theory foundation that framed this study. Furthermore, the four content domains identified in this study nest comfortably within the framework of profound knowledge.

Recommendations for Future Research

The goal of this study was to inform a competency framework to guide the professional education of master strategists. This study looked to the future. By nature, the master strategists selected to design professional education activities will be cautious in carrying forward recommendations from a single study. Thus, the following research topics were developed to assist in refining the results of this study. In the process of developing a professional education program for master strategists, the following topics were taken from discussions with the panel of experts. This

study followed a heuristic approach as the framework to identify the most important competencies for a master strategist in national security. The Delphi methodology was used to obtain a reliable data set from twelve professional strategists. The patterns, themes, and concerns that panel members provided inform the recommendations for further study.

1. A different Delphi panel may identify different components of a professional education program for future master strategists. In the final round, the Delphi panel in this study consisted of 12 members selected through a process of literature review and consultation with professionals in the field of strategy, professional education, and national security. While the panel in this study represented a wide range of professional backgrounds, military ranks, and academic perspectives, a different panel could provide different insights into the professional education framework necessary to prepare future master strategists.
2. This study followed a heuristic approach. The Delphi panel members began the study with a vignette and their professional experiences as the only framework for generating responses in the first round. A different research design that provides a content based framework based on existing competency sets, professional military education program elements, or some other response-based start point may generate responses that support findings in this study or a substantially different data set.
3. The content domains (Tables 13-16) should be vetted to confirm relevance and usefulness in guiding development of a professional military education

program for master strategists. If validated, the content domains will enhance the relevance of curriculum to professional practices.

4. The rationale for master strategist competencies (Tables 22-26) should be vetted to confirm their relevance and usefulness as guidelines for a professional military education program for master strategists. If validated, the rationale will clarify ways to link the attributes that lead to critical master strategist competencies.
5. This study highlighted the importance of professional education as a continual process—by design that requires master strategists to update or to develop abilities as the operating environment changes. There is a need to establish the characteristics and utility of education oriented on preparing individuals to be continual learners as opposed to professional education oriented on course objectives and discrete levels of abilities (Tables 1-3).
6. Similar, heuristic Delphi studies should be designed to develop a procedure that accurately identifies the dominate traits of a master strategist. Expert descriptions of the master strategist (Chilcoat, 1995; Metz, 1991) and results from this study provided a multi-faceted view in terms of roles, outlooks, and capabilities. Given the complex, interdependent nature of master strategist roles and capacities, an instrument-based approach, in the near term, may be the least desirable strategy.
7. Future research should be designed to develop a method to integrate educational processes with operational outcomes. Panel members in this study identified outcomes that applied equally to an educational as well as to an

operational setting. Panel members emphasized the importance of an educational framework that incorporates feedback from the strategy development process to inform ongoing educational needs—to make the competency framework relevant to the current operating environment.

8. After a decent interval, a similar heuristic Delphi study should be designed to determine the extent professional education program developers incorporated findings and recommendations of this study into a master strategist professsional education program.

Summary of the Study

This study began with the question that would not go away: is our professional education program for national security master strategists right for the times? National security in the twenty-first century envisions a world that is more than safe—the world must be better. Over the past two centuries, military and civilian leaders have worked to make professional military education right for the times. Based on perceptions of the Delphi panel of experts in this study, the rapid pace of change in the security environment will continue through the foreseeable future. Thus, the nature of our strategy for developing professional education programs must evolve continually in order to remain on the cusp of relevance. The question that opened this study has continuing relevance—we must remain vigilant in searching for improvements to professional military education for master strategists.

In regards to the continuing search for improvements to professional military education, this study contributed to identifying the future professional education

needs of master strategists. The panel of experts identified a series of related attributes that combine to establish a desired end-state or necessary conditions for a professional education framework. In practical application, this study provided a competency framework that shows evolving linkages that connect master strategist roles and professional education requirements. The panel of experts provided a glimpse of the future concerning master strategists. The underlying message remained consistent from start to finish—developing a rigorous professional education program for master strategists is of critical importance and poses daunting challenges. The future looks bright!

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APPENDIX A

DELPHI PANEL OF EXPERTS

Title	Initial	Last Name	Organization
Colonel (U.S. Army, Ret.)	J.	Cerami	Texas A&M University College Station, TX
Major General (USAF, Ret.)	T.	Darling	Texas A&M University College Station, TX
Dr.	R.	Dorff	U.S. Army War College Carlisle Barracks, PA
Lieutenant Colonel (Dr.)	A.	Echevarria	Army War College Carlisle Barracks, PA
Dr.	R.	Hallenbeck	SAIC Washington, DC
Mr.	M.	Hix	RAND Washington, DC
Dr.	D.	Ippolito	Southern Methodist University Dallas, TX
Dr.	W.	Johnsen	Army War College Carlisle Barracks, PA
Dr.	J.	Smith	U.S. Air Force Academy Colorado Springs, CO
Colonel	J.	Spinelli	U.S. Army Washington, DC
Dr.	M.	Thoms	Penn State University Erie, PA
Dr.	H.	Winton	Air War College Maxwell Air Force Base, AL

APPENDIX B

DELPHI VIGNETTE

Imagine that you have been asked to develop a competency-based professional education program for master strategists – for the year 2022. After an extensive search for an accurate description of what the world is like in 2022 – you find no useful information. Then you learn from an unimpeachable authority that a time traveler will appear to you very soon. The traveler comes from 20 years in the future. The traveler knows everything there is to know about competencies that master strategists will require to integrate all components of national power – political, economic, military, cultural, technological and educational –in the year 2022. You will get to ask that time traveler 10 questions about that world and the competencies master strategists will need in that future. The single drawback to this extraordinary situation is that the time traveler is mute. S/he can only nod yes or no to questions.

APPENDIX C

ROUND ONE COLLECTION WEB PAGE

Special Instructions

Please pose to the time traveler 10 yes / no questions concerning the competencies a master strategist will require to integrate all components of power to protect national interests in the year 2022.

When you are ready to begin making your questions, click on the ‘continue’ button for access to the input form.

You may start, stop and resume your inputs at any time during Round One.

Input Form

Question No.	Questions
1	
2	
3	
4	
5	
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7	
8	
9	
10	

APPENDIX D

ROUND ONE QUESTION LIST

Question Database Id.	Question Text
1	Have there been significant advances in learning paradigms that now permit strategists to inculcate and synthesize a broad range of knowledge from many domains, or is post-graduate education still single-discipline focused?
2	Are there now techniques that permit strategists to better stay abreast of the rapidly accelerating growth of knowledge?
3	Has the role of nation states diminished relative to other entities on the world stage?
4	Was Frank Fukuyama right about the end of history and the last man?
5	Are there entirely new domains of knowledge?
6	Is human existence threatened by environmental change?
7	Are supranational governments in existence?
8	Is English the predominant world language?
9	Are there new means of conflict resolution?
10	Do more than four countries in the world have GNPs that come to more than half of the US GNP?
11	Was 25 percent or more of the US GDP in 2022 attributable to trade?
12	Was the number of nuclear states in 2022 equal to 12 or more?
13	Has a nuclear war been fought?
14	Was the amount the United States spent on defense last year equal to or greater than 4 1/2 percent of GNP?
15	Does the Communist Part still rule mainland China?
16	Is Russia still a democracy?
17	Will it be vital to U. S. security to operate in a multilateral vice unilateral fashion?
18	Will overextension in the world create an isolationist backlash in U.S Foreign and security policy?
19	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?
20	Will the war against terrorism radically transform the way we think about national security strategy and structures?
21	Will enemies circumvent U. S. technological superiority with lethal asymmetrical strategies?
22	Will the transatlantic link survive in a new and healthy NATO alliance?
23	Will globalization in all of its positive forms continue?
24	Will global transparency continue to play a major role in the way we plan and execute military operations?
25	Will allies ever match the U. S. transformation process?
26	Will Russian-American relations continue to evolve in a positive fashion?
27	Is the ends, ways, means framework still used as a strategy paradigm?
28	Is the US still the only superpower?
29	Are Russia, China, and India peer competitors for global leadership?
30	Does the UN still exist as a collective security institution?
31	Does NATO still exist?
32	Has the role of technology dramatically transformed the nature of warfare (through precision munitions, unpiloted air and ground vehicles, robotics, C4ISR & information technology)?
33	Does the US continue to publish a national security strategy?
34	Does the US national security strategy continue to emphasize values (such as democratic governance, economic capitalism, military strength) and interests (such as defense of the homeland, economic well being, favorable world order, and promotion of values?)
35	Are there new international security institutions and organizations?
36	Is the nation-state still the primary unit of governmental organization in world affairs?
37	Is the nation-state still the primary actor in international relations?
38	Has there been a major theater war in the past two decades?

Question Database Id.	Question Text
39	Have there been any significant incidences of "information warfare" in the past twenty years?
40	Have regional economic organizations and markets substantially replaced national economies?
41	Have global military expenditures substantially increased in the past twenty years?
42	Has the US defense budget increased substantially in the past twenty years?
43	Are there any cases of successful restoration of "statehood" and democracy since 2003?
44	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
45	Does the US still have separate military services?
46	Are international organizations such as the United Nations more significant players in international affairs than in 2003?
47	Is military power still exercised by states in the developed world?
48	Is economic power exercised via super state concerts in the developed world?
49	Is “state” a viable construct in the developing world?
50	Is there an effective supra-state security organ as opposed to a self-help security system?
51	Does “cooperation/relatively benign competition” describe developed world interactions?
52	Is the focus of conflict primarily control of territory and natural resources?
53	Is the focus of conflict primarily control of human capital and regime survival?
54	Has economic leverage surpassed military force as the primary security dynamic within the state/super state portion of the global system?
55	Is military force/coercion the only effective instrument in the developing world?
56	Have super weapons (nuclear, chemical, biological, directed energy) proliferated to the point where they are the “coin of the realm” in global security dynamics?
57	Will there be a good written record of everything that has occurred during the history of the U.S. in terms of national security issues?
58	Will the strategist have a good understanding of the strengths and weaknesses of different time orientations?
59	Will the strategists have access to people with different personalities who are willing and able to contribute to the strategy process?
60	Is the strategist open minded?
61	Is the strategist flexible in terms of personality, and adaptation to changing circumstances?
62	Is the strategist the intuitive or sensing type?
63	Does the strategist listen well?
64	Does the strategist have a vision that drives his/her behavior?
65	Does the strategist have high self efficacy regarding his/her ability to achieve his/her vision?
66	Does the strategist believe in his/her followers' abilities?
67	Is the United States still a "prime mover" in the world in 2022?
68	Is the nation-state model still valid for understanding international relations?
69	Is the United States at war with another state?
70	Is the United States at war with a non-state actor?
71	Is the United States part of an effective alliance?
72	Is the United States part of an effective coalition?
73	Does the United States have a dominating military force?
74	Is the U.S. economy strong?
75	Is the U.S. influential diplomatically?
76	Is the U.S. still the champion of democratic and free market values?
77	Are there security threats that political leadership does not comprehend?
78	Is there a strategic consensus about the primary threat the United States faces?
79	Does the level of budgetary support for defense match the strategy currently in place?
80	Does the budget contain sufficient margins to accommodate any needed future buildups?
81	Are appropriate moral and ethical values reflected in U.S. security policy?
82	Is there a realistic understanding of the culture and values of enemy states and groups?
83	Is the security studies curriculum for military leaders balanced and realistic?
84	Does the public support the military?
85	Has the nation resolved the fiscal challenges of publicly-financed retirement and healthcare programs?

Question Database Id.	Question Text
86	Does the U.S. have reliable, strong allies?
87	Must a master strategist in 2022 be able to discern correctly the willingness of the American people to defend their liberties?
88	Must a master strategist in 2022 be able determine the willingness of the American people to die, perhaps for extended periods, on foreign battlefields?
89	Must a master strategist in 2022 be able to determine whether or not terrorism (other threats)will remain a major threat to the US and to its interests abroad?
90	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?
91	Must a master strategist in 2022 be an accomplished student of global demographics in order to be successful?
92	In order to be successful, must a master strategist in 2022 be an accomplished leader at the strategic level in his or her org/institution of strategic planning/policymaking?
93	To be successful in 2022, must a master strategist be highly knowledgeable in the technological aspect of using outer space to further/defend USA national interests?
94	To be successful in 2022, must a master strategist be highly skilled in the interpersonal aspects of small team building to facilitate the "interagency" aspect of strategic level policymaking within US and allied governments?
95	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?
96	Must a master strategist in 2022 be an individual in high moral character to fulfill his/her responsibilities?
97	Is there anything to suggest Human Nature has changed in last 20 years? (Must understand Human Nature)
98	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law? (Must fully understand to philosophical basis of laws)
99	Is the global economic system still essentially based on capitalism? (Must comprehend basis of economic system)
100	Are Freedom of Navigation of Seas and Skies still vital to global commerce? (A fundamental of strategy hitherto)
101	Do integrated Joint Forces exist as primary tools of the Military element of power? (What is in the kit-bag?)
102	Is the Military Element of power still subordinate to Civilian Authority?
103	Is it possible to conduct undercover "Special" operations with Special Operating Forces?
104	Do we finally have confidence in the ability of our intelligence agencies to provide reliable human and technical intelligence on the actions and intentions of our enemies?
105	Are our citizens willing and able to support a military establishment of sufficient size (manpower and budget requirements) to maintain peace and security?
106	Is the prestige of the Military establishment sufficient to foster constructive relations with the Congress and the media?
107	Will the U.S. still be the dominant world power and acknowledged world leader?
108	Will the use of weapons of mass destruction by rogue nations still be a matter of priority concern?
109	Will the U.S. still have a significant portion of its military forces assigned overseas?
110	Will the Middle East still be a major trouble spot?
111	Will North Korea remain a major threat to Asia and U.S. interests?
112	Will the UN still be a viable organization for solving international disputes?
113	Will nuclear weapon stockpiles be considerably reduced from current levels?
114	Will Russia and U.S. enjoy good relations?
115	Will globalization be a cause for unrest?
116	Will the missile defense system be up and reliable?
117	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?

Question Database Id.	Question Text
118	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?
119	Were there substantial changes to the political philosophies, institutions, and processes within the US - changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision-making?
120	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision-making?
121	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision-making?
122	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?
123	Were there major changes in US national interests and national security strategy - changes that suggest the master strategist must possess a strong working knowledge of strategic concepts, strategy development techniques and national security policy formulation processes?
124	Were there substantial changes in world and national demographics, education and information levels - changes that suggest the master strategist must possess full understanding of various cultural influences on international and national perspectives, economics and policy?
125	Were there changes in world economic models and formal or informal trade and exchange relationships - changes that suggest the master strategist must possess a working understanding of major economic models and relationships?
126	Were there substantial changes in the techniques and standards that influence national and international negotiations and dialogue - changes that suggest the master strategist must possess a wealth of cognitive skills to include analysis, patter recognition, synthesis, role-playing, negotiation strategy, and human interaction?
127	Are nation states less important than they were in 2002 as political decision making (qua conflict resolution) institutions?
128	Is political, economic, industrial, and military "power" more concentrated than it was in 2002?
129	Is the world more sharply divided into economic haves and have-nots than it was 2002?
130	Is petroleum less important than it was in 2002 as a source of energy?
131	Is the world more sharply divided by religious differences than it was in 2022?
132	Has a nuclear, biological, or other catastrophe rendered a major portion of the earth's surface uninhabitable?
133	Does the average person enjoy a higher standard of living than in 2002?
134	Are political differences less likely to be decided through a resort to military or para-military force than in 2002?
135	Is scientific and technological superiority more important than it was in 2002 as a determinate of relative economic power?
136	Is crime (unlawful activity, including acts of violence) more pervasive than it was in 2002?
137	Will future strategists of 2020 require a comprehensive mastery of classical strategic theory?
138	Will the classical strategists (e.g., Sun Tzu, Thucydides, Machiavelli, Clausewitz) remain relevant in 2020?
139	Will strategic leader competencies continue to be required lower and lower in organizations?
140	Will information become a full-fledged instrument of national power?
141	Will cross-cultural savvy be important for future strategists?
142	Will there be an increased requirement for self-aware adaptive leaders?
143	Will requirements for interpersonal skills increase?
144	Will knowledge management be a key strategic competency?

Question Database Id.	Question Text
145	Will increased information technology capabilities increase the ability of senior leaders to intervene at lower levels (i.e., micromanage)?
146	Will the concepts under girding network centric warfare be realized by 2022?
147	Will the master strategist require consistency of purpose?
148	Will the master strategist require foresight?
149	Will the master strategist require contextual awareness?
150	Will the master strategist require adversarial awareness?
151	Will the master strategist be required to set constructive, realistic objectives?
152	Will the master strategist require the ability to assess the adequacy and appropriateness of available means?
153	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?
154	Will the master strategist require the ability to balance flexibility and determination in the implementation of his strategy?
155	Will the master strategist require the ability to inspire others to sacrifice their own self-interest to attain a common goal?
156	Will the master strategist require the ability to foster / sow unity among friends and allies and disunity among adversaries?

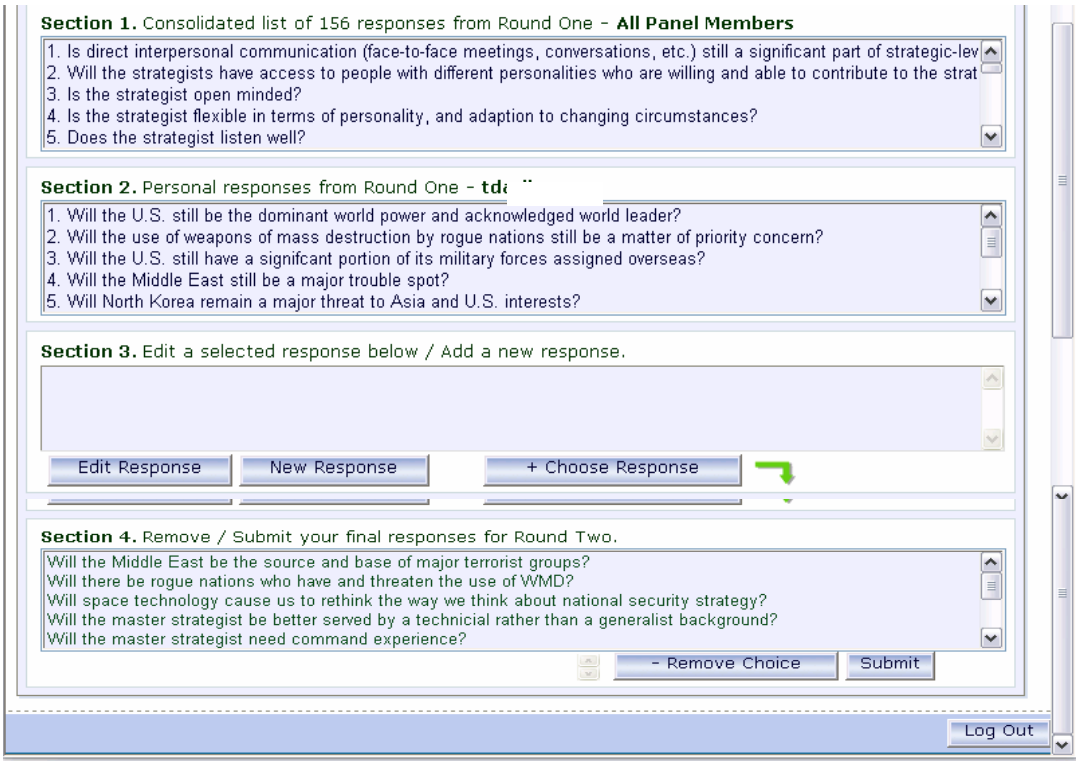
APPENDIX E

ROUND TWO WEB COLLECTION PAGE

Special Instructions

1. The first task is to do a brief review of Round One responses – yours and responses from other panelists.
2. The second task is to pose 10 yes / no questions concerning the competencies a master strategist will require to integrate all components of national power to protect national interests in the year 2022.
3. In your Round Two response, please use any combination of four options:
    a. Choose questions from your Round One response.
    b. Choose questions from the consolidated list of all Round One responses.
    c. Edit Round One questions.
    d. Develop new questions.
4. You may start, stop and resume your inputs at any time during Round Two. Your inputs are saved when you click on the 'Submit' button.

Round Two Input Form



APPENDIX F

DELPHI ROUND TWO QUESTION LIST

Question Database Id.	Question Text
1	Is the United States still a "prime mover" in the world in 2022?
2	Is the nation-state still the primary actor in international relations?
4	Are nation states less important than they were in 2002 as political decision making (qua conflict resolution) institutions?
5	Will the master strategist require consistency of purpose?
6	Have there been significant advances in learning paradigms that now permit strategists to inculcate and synthesize a broad range of knowledge from many domains, or is post-graduate education still single-discipline focused?
6	Have there been significant advances in learning paradigms that now permit strategists to inculcate and synthesize a broad range of knowledge from many domains, or is post-graduate education still single-discipline focused?
7	Are there security threats that political leadership does not comprehend?
7	Are there security threats that political leadership does not comprehend?
8	Is military power still exercised by states in the developed world?
9	Is the ends, ways, means framework still used as a strategy paradigm?
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?
14	Will the U.S. be the dominant super power in the world?
15	Do more than four countries in the world have GNPs that come to more than half of the US GNP?
16	Will future strategists of 2020 require a comprehensive mastery of classical strategic theory?
17	Is the nation-state model still valid for understanding international relations?
18	Has there been a major theater war in the past two decades?
20	Is political, economic, industrial, and military "power" more concentrated than it was in 2022?
21	Will the master strategist require foresight?
22	Are there now techniques that permit strategists to better stay abreast of the rapidly accelerating growth of knowledge?
23	Is there a strategic consensus about the primary threat the United States faces?
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?

Question Database Id.	Question Text
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?
30	Will the use of weapons of mass destruction by rogue nations still be a matter of priority concern?
31	Was 25 percent or more of the US GDP in 2024 attributable to trade?
33	Is the United States at war with another state?
34	Have there been any significant incidences of "information warfare" in the past twenty years?
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?
36	Is the world more sharply divided into economic haves and have-nots than it was 2022?
37	Will the master strategist require contextual awareness?
37	Will the master strategist require contextual awareness?
38	Has the role of nation states diminished relative to other entities on the world stage?
39	Does the level of budgetary support for defense match the strategy currently in place?
40	Is “state” a viable construct in the developing world?
43	Were there substantial changes to the political philosophies, institutions, and processes within the US - changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision-making?
43	Were there substantial changes to the political philosophies, institutions, and processes within the US - changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision-making?
44	Will the strategists have access to people with different personalities who are willing and able to contribute to the strategy process?
46	Was the number of nuclear states in 2022 equal to 12 or more?
47	Will strategic leader competencies continue to be required lower and lower in organizations?
48	Is the United States at war with a non-state actor?
50	Will the war against terrorism radically transform the way we think about national security strategy and structures?
51	Is petroleum less important than it was in 2002 as a source of energy?
52	Will the master strategist require adversarial awareness?
55	Is there an effective supra state security organ as opposed to a self-help security system?
57	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision-making?
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision-making?
59	Is the strategist open minded?
60	Will the Middle East be the source and base of major terrorist groups?
61	Has a nuclear war been fought?
63	Is the United States part of an effective alliance?
66	Is the world more sharply divided by religious differences than it was in 2022?
67	Will the master strategist be required to set constructive, realistic objectives?
68	Are there entirely new domains of knowledge?
69	Are appropriate moral and ethical values reflected in U.S. security policy?
70	Does “cooperation/relatively benign competition” describe developed world interactions?

Question Database Id.	Question Text
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision-making?
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision-making?
74	Is the strategist flexible in terms of personality, and adaptation to changing circumstances?
76	Was the amount the United States spent on defense last year equal to or greater than 4 1/2 percent of GNP?
77	Will cross-cultural savvy be important for future strategists?
78	Is the United States part of an effective coalition?
81	Has a nuclear, biological, or other catastrophe rendered a major portion of the earth's surface uninhabitable?
82	Will the master strategist require the ability to assess the adequacy and appropriateness of available means?
83	Is human existence threatened by environmental change?
84	Is there a realistic understanding of the culture and values of enemy states and groups?
85	Is the focus of conflict primarily control of territory and natural resources?
86	Has the role of technology dramatically transformed the nature of warfare (through precision munitions, unpiloted air and ground vehicles, robotics, C4ISR & information technology)?
87	Must a master strategist in 2022 be able to discern correctly the willingness of the American people to defend their liberties?
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?
91	Does the Communist Part still rule mainland China?
93	Does the United States have a dominating military force?
96	Does the average person enjoy a higher standard of living than in 2022?
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?
98	Are supranational governments in existence?
100	Is the focus of conflict primarily control of human capital and regime survival?
102	To be successful in 2022, must a master strategist be highly knowledgeable in the technological aspect of using outer space to further/defend USA national interests?
104	Does the strategist listen well?
106	Is Russia still a democracy?
108	Is the U.S. economy strong?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
110	Will global transparency continue to play a major role in the way we plan and execute military operations?
111	Are political differences less likely to be decided through a resort to military or para-military force than in 2022?
112	Will the master strategist require the ability to balance flexibility and determination in the implementation of his strategy?

Question Database Id.	Question Text
115	Has economic leverage surpassed military force as the primary security dynamic within the state/super state portion of the global system?
117	To be successful in 2022, must a master strategist be highly skilled in the interpersonal aspects of small team building to facilitate the "interagency" aspect of strategic level policymaking within US and allied governments?
118	Were there substantial changes in world and national demographics, education and information levels - changes that suggest the master strategist must possess full understanding of various cultural influences on international and national perspectives, economics and policy?
119	Does the strategist have a vision that drives his/her behavior?
121	Will knowledge management be a key strategic competency?
121	Will knowledge management be a key strategic competency?
123	Does the US still have separate military services?
125	Is scientific and technological superiority more important than it was in 2022 as a determinate of relative economic power?
126	Will the master strategist require the ability to inspire others to sacrifice their own self-interest to attain a common goal?
127	Are there new means of conflict resolution?
129	Is military force/coercion the only effective instrument in the developing world?
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?
132	Were there changes in world economic models and formal or informal trade and exchange relationships - changes that suggest the master strategist 2022 must possess a working understanding of major economic models and relationships?
136	Is the U.S. still the champion of democratic and free market values?
139	Is crime (unlawful activity, including acts of violence) more pervasive than it was in 2022?
140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?
141	Does the U.S. have reliable, strong allies?
142	Have super weapons (nuclear, chemical, biological, directed energy) proliferated to the point where they are the “coin of the realm” in global security dynamics?
144	Must a master strategist in 2022 be an individual in high moral character to fulfill his/her responsibilities?
145	Were there substantial changes in the techniques and standards that influence national and international negotiations and dialogue - changes that suggest the master strategist must possess a wealth of cognitive skills to include analysis, patter recognition, synthesis, role-playing, negotiation strategy, and human interaction?
148	Will the concepts under girding network centric warfare be realized by 2022?
149	Is there anything to suggest Human Nature has changed in last 20 years? (Must understand Human Nature)
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law? (Must fully understand to philosophical basis of laws)
151	Is the global economic system still essentially based on capitalism? (Must comprehend basis of economic system)
152	Are Freedom of Navigation of Seas and Skies still vital to global commerce? (A fundamental of strategy hitherto)
153	Do integrated Joint Forces exist as primary tools of the Military element of power? (What is in the kit-bag?)
154	Is the Military Element of power still subordinate to Civilian Authority?
154	Is the Military Element of power still subordinate to Civilian Authority?
155	Is it possible to conduct undercover "Special" operations with Special Operating Forces?
155	Is it possible to conduct undercover "Special" operations with Special Operating Forces?
156	Do we finally have confidence in the ability of our intelligence agencies to provide reliable human and technical intelligence on the actions and intentions of our enemies?
156	Do we finally have confidence in the ability of our intelligence agencies to provide reliable human and technical intelligence on the actions and intentions of our enemies?

Question Database Id.	Question Text
157	Are our citizens willing and able to support a military establishment of sufficient size (manpower and budget requirements) to maintain peace and security?
158	Is the prestige of the Military establishment sufficient to foster constructive relations with the Congress and the media?
222.01	Did new threats emerge by 2022 that were not widely recognized in 2002?
222.02	Did the US establish a secure, stable, and democratic government in Iraq?
222.04	Must a master strategist in 2022 be an accomplished student of global demographics in order to be successful?
222.06	Will there be rogue nations who have and threaten the use of WMD?
222.07	Will space technology cause us to rethink the way we think about national security strategy?
222.08	Will the master strategist be better served by a technical rather than a generalist background?
222.09	Will the master strategist need command experience?
222.11	Did terrorists use WMD successfully against the US and its allies?
222.16	Will the U.S. control the entry to outer space?
222.17	Are political differences less likely to be resolved by war?
222.18	Will the master strategist need to have had combat arms experience?
222.19	Will control of space be vital to victory in major military conflict?
222.21	Did the US defeat Al Qaeda and the threats posed by Islamic radicals?

APPENDIX G

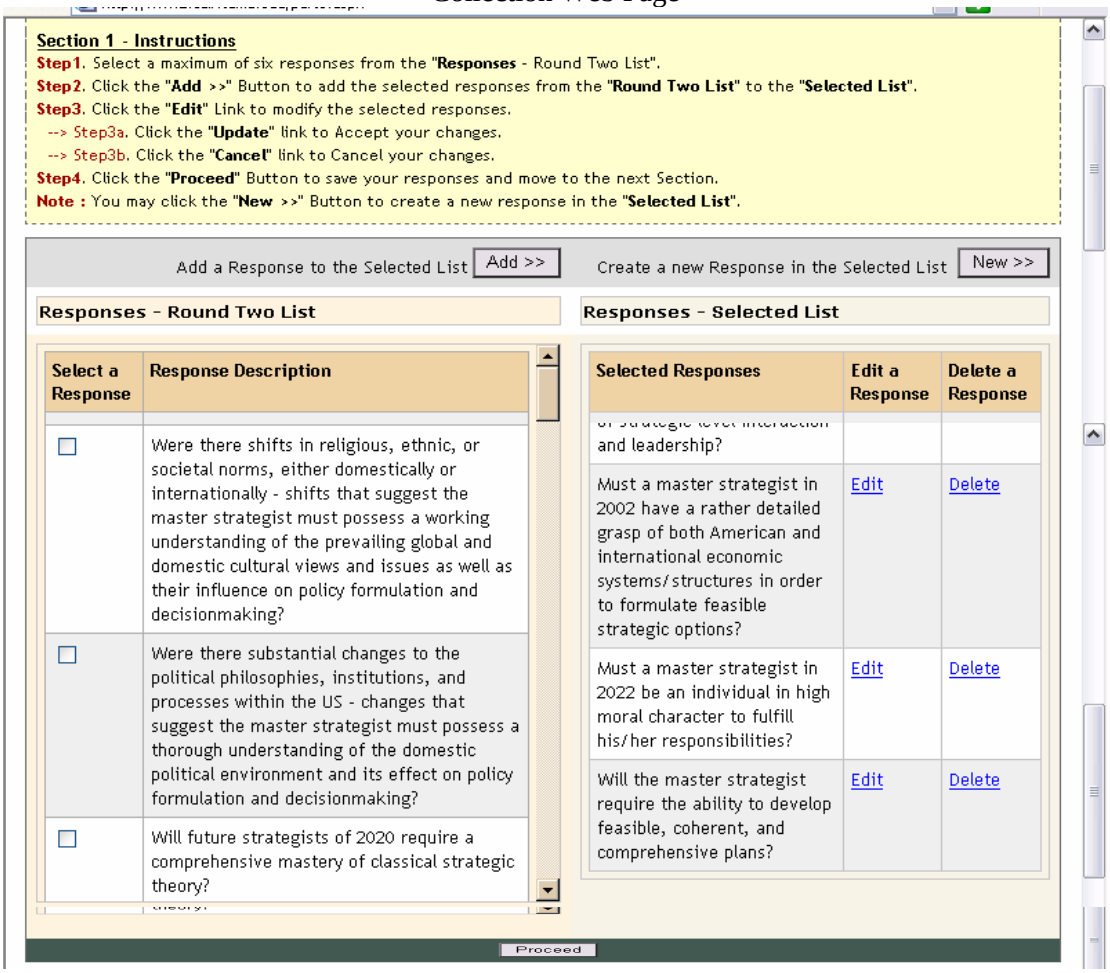
ROUND THREE COLLECTION WEB PAGE

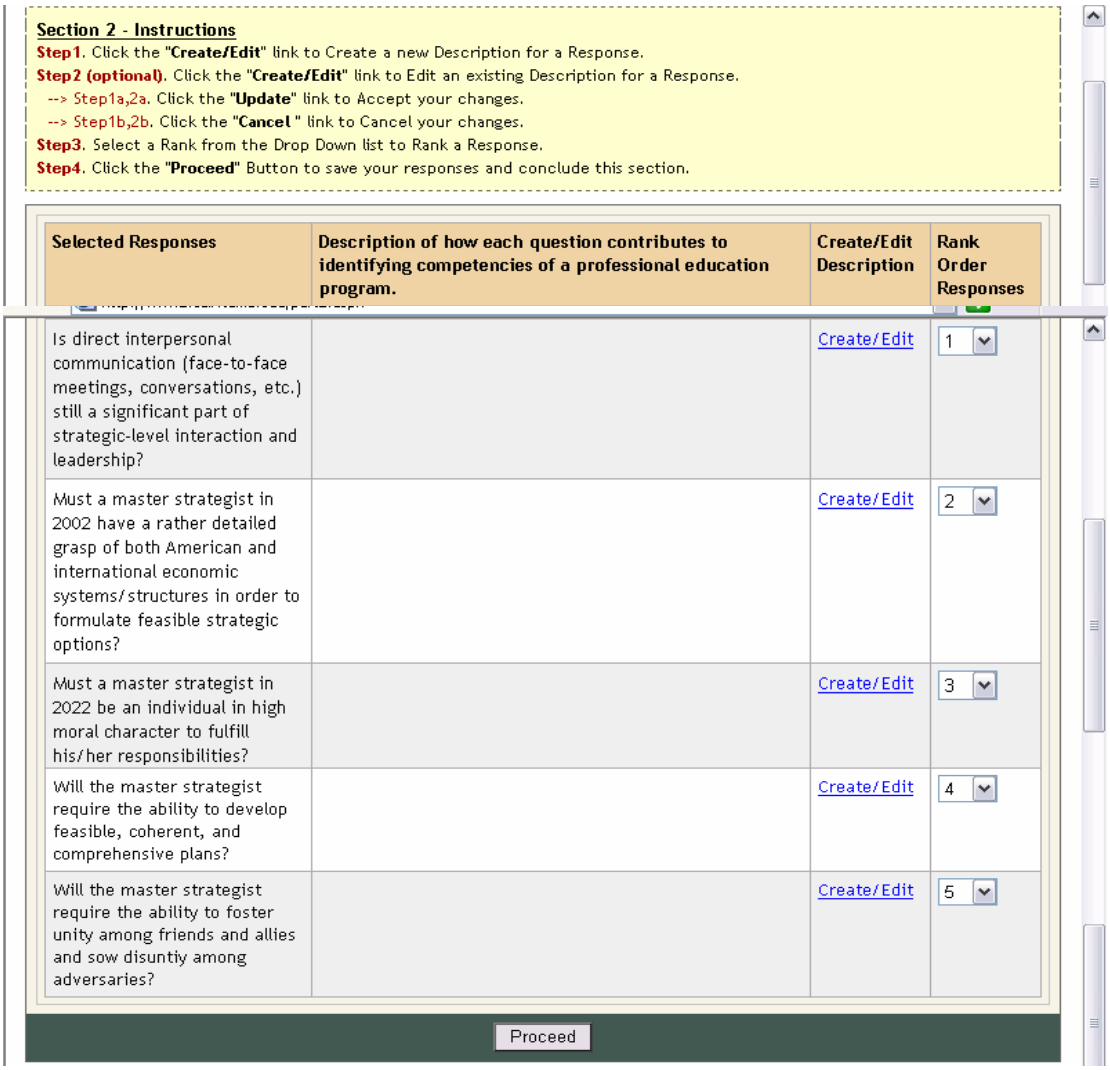
Special Instructions

The Time Traveler has modified the rules for Round Three. In this round you are asked to:

1. Ask 6 yes / no questions. As before, you may use existing questions from the master list, edit existing questions or pose new questions.
2. Provide a short description of how each question will contribute knowledge to identifying competencies for a professional education program for Master Strategists.
3. Rank order each question / contribution.
4. You may start, stop and resume your work. To save your work, click the 'Proceed' button.

Collection Web Page





Section 2 - Instructions

Step1. Click the "**Create/Edit**" link to Create a new Description for a Response.
Step2 (optional). Click the "**Create/Edit**" link to Edit an existing Description for a Response.
--> Step1a,2a. Click the "**Update**" link to Accept your changes.
--> Step1b,2b. Click the "**Cancel** " link to Cancel your changes.
Step3. Select a Rank from the Drop Down list to Rank a Response.
Step4. Click the "**Proceed**" Button to save your responses and conclude this section.

Selected Responses	Description of how each question contributes to identifying competencies of a professional education program.	Create/Edit Description	Rank Order Responses
Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?		Create/Edit	1
Must a master strategist in 2002 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?		Create/Edit	2
Must a master strategist in 2022 be an individual in high moral character to fulfill his/her responsibilities?		Create/Edit	3
Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?		Create/Edit	4
Will the master strategist require the ability to foster unity among friends and allies and sow disuntiy among adversaries?		Create/Edit	5

Proceed

APPENDIX H

DELPHI ROUND THREE QUESTION LIST

Question Database Id.	Question Text
2	Is the nation-state still the primary actor in international relations?
2	Is the nation-state still the primary actor in international relations?
7	Are there security threats that political leadership does not comprehend?
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?
11	Were there substantial changes in the area of international and bilateral treaties, organizations, agreements or understandings - military and political - changes that suggest the master strategist must possess a working familiarity with the full range of international political-military and security relationships in 2022?
16	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?
16	Will future strategists of 2022 require a comprehensive mastery of classical strategic theory?
17	Is the nation-state model still valid for understanding international relations?
18	Has there been a major theater war in the past two decades?
21	Will the master strategist require foresight?
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?
27	Were there technological advances that revolutionized or otherwise substantially altered the economic or military capabilities of the US and other nations more broadly - advances that suggest the master strategist must possess a full understanding of these technologies, a working knowledge of global military and economic capabilities, and the influence of technology on the balance of power in 2022?
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?
35	Will the Huntington thesis of the clash of civilizations come true with the rise of Islamic extremism?
43	Were there substantial changes to the political philosophies, institutions, and processes within the US - changes that suggest the master strategist must possess a thorough understanding of the domestic political environment and its effect on policy formulation and decision making?
44	Will the strategists have access to people with different personalities who are willing and able to contribute to the strategy process?
47	Will strategic leader competencies continue to be required lower and lower in organizations?
50	Will the war against terrorism radically transform the way we think about national security strategy and structures?
57	Must a master strategist in 2022 be able to gage accurately the potential for political coalitions between US and like minded countries on issues of specific mutual interest?
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?

Question Database Id.	Question Text
58	Were there shifts in religious, ethnic, or societal norms, either domestically or internationally - shifts that suggest the master strategist must possess a working understanding of the prevailing global and domestic cultural views and issues as well as their influence on policy formulation and decision making?
61	Has a nuclear war been fought?
67	Will the master strategist be required to set constructive, realistic objectives?
68	Are there entirely new domains of knowledge?
68	Are there entirely new domains of knowledge?
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?
73	Were there significant changes in energy and food production, quality and quantity of natural resources, and biological health - changes that suggest the master strategist in 2022 must possess a working knowledge of major environmental and economic models, relationships and policy as they relate to national and international policy formulation and decision making?
77	Will cross-cultural savvy be important for future strategists?
82	Will the master strategist require the ability to assess the adequacy and appropriateness of available means?
86	Has the role of technology dramatically transformed the nature of warfare (through precision munitions, unpiloted air and ground vehicles, robotics, C4ISR & information technology)?
87	Must a master strategist in 2022 be able to discern correctly the willingness of the American people to defend their liberties?
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?
88	Were there conflicts or crises by 2022 that altered domestic or international views on the application of military power, economic assistance, or political involvement - conflicts suggest the master strategist must possess a basic understanding of the major theories, models and histories of conflict among regions or within regions and nation-states?
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?
97	Will the master strategist require the ability to develop feasible, coherent, and comprehensive plans?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
109	Is direct interpersonal communication (face-to-face meetings, conversations, etc.) still a significant part of strategic-level interaction and leadership?
112	Will the master strategist require the ability to balance flexibility and determination in the implementation of his strategy?
117	To be successful in 2022, must a master strategist be highly skilled in the interpersonal aspects of small team building to facilitate the "interagency" aspect of strategic level policymaking within US and allied governments?
119	Does the strategist have a vision that drives his/her behavior?
123	Does the US still have separate military services?
127	Are there new means of conflict resolution?

Question Database Id.	Question Text
127	Are there new means of conflict resolution?
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?
131	Must a master strategist in 2022 have a rather detailed grasp of both American and international economic systems/structures in order to formulate feasible strategic options?
132	Were there changes in world economic models and formal or informal trade and exchange relationships - changes that suggest the master strategist in 2022 must possess a working understanding of major economic models and relationships?
140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?
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140	Will the master strategist require the ability to foster unity among friends and allies and sow disunity among adversaries?
144	Must a master strategist in 2022 be an individual in high moral character to fulfill his/her responsibilities?
145	Were there substantial changes in the techniques and standards that influence national and international negotiations and dialogue - changes that suggest the master strategist in 2022 must possess a wealth of cognitive skills to include analysis, pattern recognition, synthesis, role-playing, negotiation strategy, and human interaction?
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?
150	Values will no doubt have changed in the last 20 years; but is a Judeo-Christian ethic still the general basis for national and international law?
222.08	Will the master strategist be better served by a technical rather than a generalist background?
222.09	Will the master strategist need command experience?
222.11	Did terrorists use WMD successfully against the US and its allies?
222.18	Will the master strategist need to have had combat arms experience?
222.18	Will the master strategist need to have had combat arms experience?
333.01	How much and in what ways will the war against terrorism transform the way we think about national security strategy and structures?
333.02	How proficient must a strategist be in his/her understanding of foreign cultures, language, politics, and history?
333.03	In the foreseeable future, how important will alliances, coalitions, and international organizations be in the furtherance of national security objectives?
333.04	Is armed force still the primary ultimate means of conflict resolution?
333.05	What can / should be done politically, diplomatically and/or militarily to further national adherence to the rule of law?
333.06	What must a strategist know about the strategic application of military force as an instrument of national security policy?

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This dissertation was typed by Bill A. Ashworth, Jr.